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COTTON

SEPTEMBER, 1911

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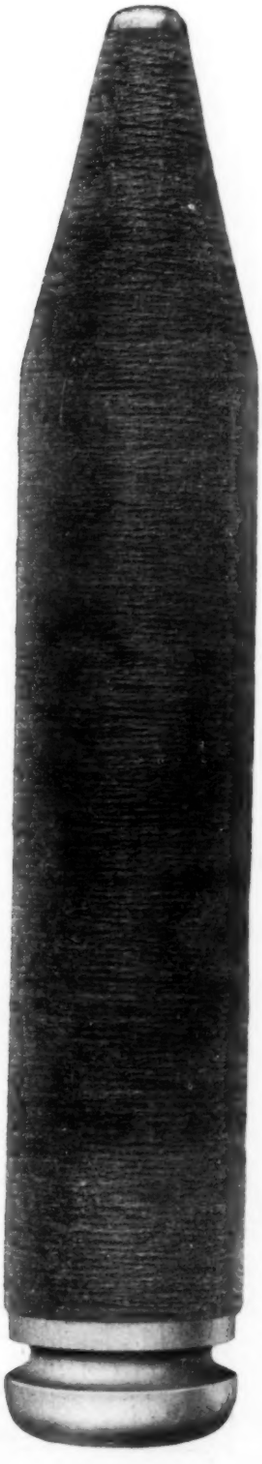

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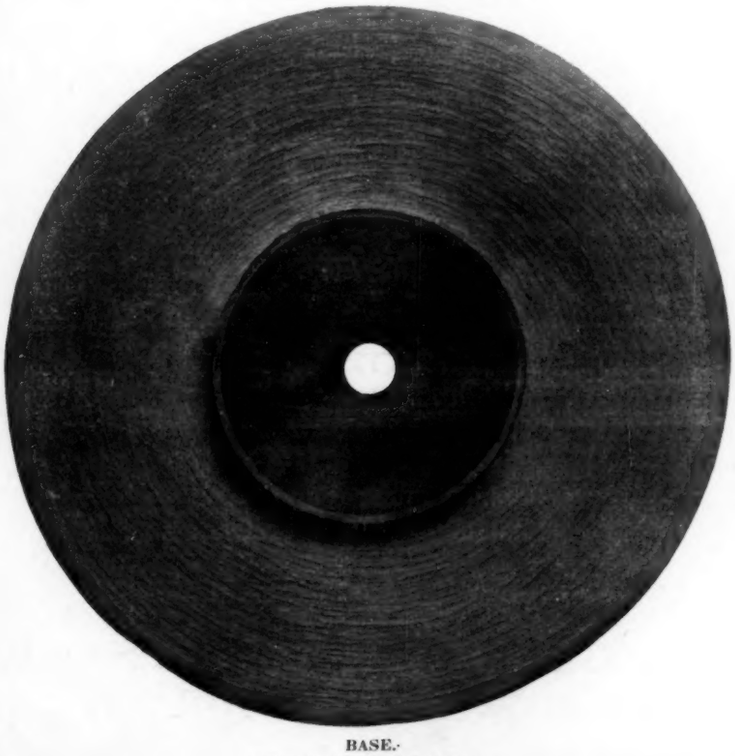

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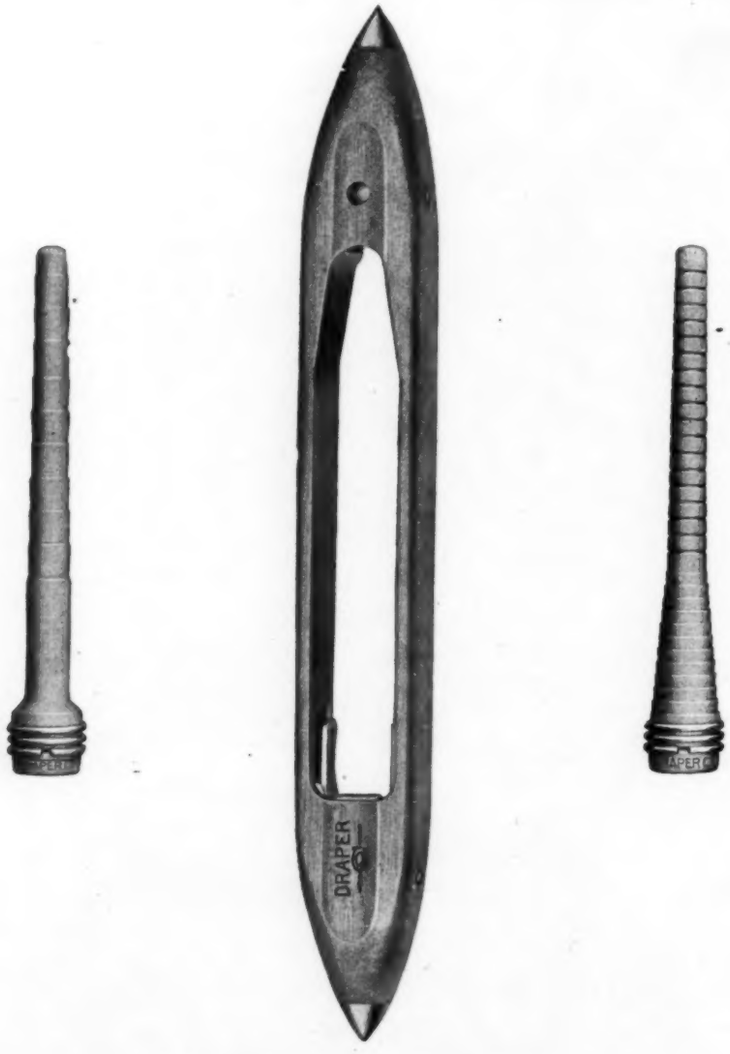

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COTTON

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THAT EXTRAORDINARY SESSION OF THE SIXTY-SECOND CONGRESS.

A revision downward in the tariff on textiles has been the war cry of the majority of congressmen during the session just closed. It seemed to make no difference which party fathered the bills, or from which house they emanated; whether they were founded on new data, or on no data; whether the theories embodied therein were sane ideas, or insane halucinations; if they were of a nature to assist in smashing the textile industry, they were received with enthusiasm by the majority. The most charitable excuse thus far advanced in behalf of these legislators is that the intense heat in Washington during the past summer proved too much for their depleted vitality.

In refusing to sanction the tariff bills just passed by both houses of Congress, President Taft has, in a great measure, redeemed the popularity and respect which had been lost to him through a combination of untoward circumstances. These bills were not carefully prepared and by no means fairly represented what the present trade conditions required. They were patched together and pushed through for the sole purpose of providing political powder for the presidential campaign of 1912.

It is a fact that the protective principal has induced abuses and allowed them to grow to more or less bloated proportions, but the only fair and proper way to remedy these conditions is by means of a permanent non-partisan tariff commission, which shall decide, after careful and scientific research, what schedules, or particular items of a schedule, should be revised and in what manner. Tariff revision on any schedule whatever, should be based on the broad principal of the greatest good for the greatest number and important changes, if found necessary, should be made in such a manner as not to cripple any industry.

"The slashing method" adopted in preparing the Underwood and LaFollette Bills is an excellent example of how tariff revision should not be accomplished. The members of the present congress must be made to understand that they represent the people and not some pet political platform. This should be done now, that they be prepared in due season for the coming session. Too many people shirk their duty in these matters and trust to the other fellow to accomplish what they desire, when they should have their shoulders to the wheel, doing their share of the pushing.

Last April Cotton advocated a permanent tariff commission and as that plea, directed as it was toward the special session of Congress then about to convene, is quite as applicable to the coming session next December, it is reprinted entire.

"While it is almost certain that the special session of Congress will be used as a vehicle to open up the subject of tariff revision, it is to be devoutly hoped that the present action will be confined to the appointment of an independent permanent tariff commission, whose duty it shall be to

take up the schedules listed for revision and give each and every one of them a fair and honest examination and at the same time allow those interested, or their representatives, an opportunity to present their side of the case, if it seems to them desirable to do so.

"It would be far wiser for the Democratic majority in the House to confine its efforts to some such preparatory measures that would probably receive the support of the majority of the Senate and the sanction of the President. A party demonstration at this time would inevitably result in a fruitless tariff agitation throughout the whole summer.

"This is particularly undesirable in view of the fact that ever since the tariff legislation of 1909, the rumor maker has had a busy time prognosticating further tariff revision, denouncing the present tariff law and creating general business and political unrest. The very natural result has been seen in the deflated market conditions, the unusual stagnation of business and the remarkable hesitancy of capital to embark in new channels. It is only fair to the manufacturer and his employees, that any legislation affecting textiles during the session should be of such a nature as to convince invested capital of its untimate fairness and that revision, if found necessary, will be gradual and suited to meet the business conditions obtaining among plants that will be actually affected by the changes decided upon.

"The mere fact that the experts employed by the present tariff board have their reports on textiles nearly completed, should not be urged as an excuse for making any hasty moves that can accomplish nothing at this session but prolonged argument in Congress and further business depression throughout the whole country. The mere suggestion that such agitation may take place has already shown itself in a very preceptible tightening in the money markets of the leading textile centers.

"Public opinion has seldom expressed so much interest in a single question before Congress as it is showing in this question of creating a permanent tariff commission. This commission would control one of the most vital functions of the Government and one that should be kept free from 'politico-legislative' interference. The business interests of the country and the people of all sections and of all political faiths, desire and demand an immediate action on this important question and no more time should be lost in obstructive parliamentary tactics. This question is now square up to each individual member of the sixty-second Congress and no one of them should fail to heed the hand writing on the wall, or forget for an instant that drastic tariff legislation at this time from any cause, or for any reason whatever, from pleasing political prophets to keeping party promises would not only be an unfortunate error, but a suicidal policy."

In his maiden speech as speaker of the House of Representatives, the Hon. Champ Clark said: "We are this day put upon trial and the duty devolves upon us to demonstrate, not so much by fine phrases as by good works, that we are worthy of the confidence imposed in us by the voters of the land and that we are worthy of their wider confidence."

These are "fine phrases" indeed and were received as such by the general public. Reverting to the "good works" section, the New York *Commercial* sums up their five month's of serious labor as follows:

"This extraordinary session of the sixty-second Congress will go down in legislative history as one of conspicuous non-achievement. About its only tangible accomplishments have been the ratification of the Canadian-reciprocity treaty, the admission of Arizona and New Mexico to statehood and the merely perfunctory passage of the apportionment bill on the basis of the returns of the census of 1910. All this might have been done in a fortnight. Instead, Congress has been beating the empty air for nearly five months and keeping everybody on the ragged edge of apprehension as to what it might do. Such inflictions occasionally are the inevitable lot of a free and gloriously independent people—and perhaps they ought not to complain loudly so long as the republic is safe."

However gratified he may feel because the foundation stones of the republic were left undisturbed, it is doubtful if the idle operative will be heard singing any peans of joy over his prospects for the coming winter. What he wants, needs and must have is safe and sane legislation, a permanent non-partisan tariff commission and a broader foreign field for cotton textiles.

A PLAN TO SECURE EXPORT TRADE.

On page 287 of the June issue there appeared an announcement under the above heading which was made on the authority of the President of the Commercial Bureau Co., of New York. Unfortunately his statements were not entirely in accordance with the facts as will be seen by the following extract from a letter from the Department of State at Washington, D. C. The italics are ours.

"You are informed that while this Department views with favor all proper efforts for the extension of American export trade, *it has made no arrangement to co-operate with, or grant any facility to the Commercial Bureau Company,* other than that accorded to all legitimate American enterprises to enjoy such facilities as the consular service may offer for the extension of the market for American goods. The Commercial Bureau Company has been informed as above and that the Department can not grant to any one individual or organization any special or exclusive privileges or advantages which are not enjoyed by others and has been told that consular officers receiving the indexes of this firm will place them, along with other index catalogues, trade publications, et cetera, in the commercial libraries of their respective offices."

During 1910 the market for raw cotton in Hongkong was dull, the general causes being the high prices throughout the world, resulting in restriction of Chinese consumption of foreign cotton, and the watering cotton produced in China and shipped abroad, particularly to Japan. China's chief supply of imported raw cotton comes from India, a large portion of its imports being handled in Hongkong, but in a general way the Indian prices follow closely those in other portions of the world, and it is seldom that there is any material advantage in the Indian market over American markets other than in differences in quality of staple and in freights.

The California Development Board states that 17,000 acres are planted this season to cotton in the Imperial Valley. It is said that last season the acreage was only about half this, yet about 10,000 bales were produced. Upland cotton is grown, but Egyptian fiber is being experimented with, and will probably be planted more extensively in the future; it is being grown successfully in Arizona on a small scale.

AN EXPORT DUTY ON RAW COTTON.

A Subject of Interest Advanced by One Manufacturer and Discussed by Many Others —Also Some Pointed Paragraphs Pertaining to the Tariff.

Among the subjects suggested for discussion under the head of the "Cotton Manufacturers Forum," which was first described in the May issue of COTTON, was the subject of "Export Duties on Raw Cotton." The suggestion for this subject came from two sources, one of which is the president and treasurer of a prominent factory located in the middle West.

In writing on this subject he says in part: "It strikes me that the most feasible and the most important thing in the interest of cotton culture and cotton development for America, would be to lay an export duty on cotton of one-half to one cent per pound and provide that the duty so collected shall be returned to each State producing the cotton exported, the refund to each State to be paid in the form of a bonus equally divided between the number of spindles operated in such States, or on the basis of the yardage of yarns spun in each State producing and exporting the cotton.

"This would give American manufacturers a leverage of advantage over European manufacturers; it would return to each State all of the revenue collected from the export duty and would give more impetus to the manufacture of cotton in the Southern States; while the bonus being on the yardage, it would give a great advantage to the manufacturer of fine yarns and fine goods which is just what is needed in the Southern States.

"I believe this is feasible and in order to avoid any trade disturbance with foreign countries, it might be best to make a sliding scale for the export duty. For instance, one-quarter of a cent the first year, one-half a cent the second year, three-quarters of a cent the third year and one cent the fourth year, holding the export duty at one cent per pound thereafter. This would certainly boom the growth and manufacture of cotton in the South, while the export duty would be sufficient protection for the manufacture of cotton in Northern States.

"If the Southern representatives and Southern farmers were fully advised in regard to the merits of this proposition, they would have something that would revolutionize the prosperity of the South and if you will advocate this policy in COTTON and succeed in having it advocated by other textile papers and by men of influence in the South, you will do more for the advancement of cotton and cotton manufacture than can be done in any other way in the judgment of the writer."

Prof. Jeremiah W. Jenks, of Cornell University, in a personal letter to the editor, says, "An export duty often works well. For instance on Manila hemp in the Phillipines and on tin in the Frederated Malay States, in which cases there is a monopoly element. I believe, however, the United States Constitution does not permit us to levy an export duty." This is a fact. In as much, however, as this clause of the constitution was enacted in the year 1787 under conditions varying greatly from the conditions now existing in this country, a short historical summary showing just what those conditions were and why this clause was inserted may be of interest.

This prohibition against export duties was inserted into the Constitution as a part of the third great compromise in the Constitutional Convention and was a concession to the South. This prohibition of any duties on exports is absolute; but in no sense refers to the internal revenue tax on tobacco in the form of a stamp, when that tobacco may by chance be exported. The third compromise was, in the words of Gouverneur Morris, "A bargain" between the extreme Southern States and New England. Each of these two sections had a particular grievance against the Constitution as it stood in the form reported by the committee of detail on August 6th, 1787. The sixth section of the seventh article, which required a two-thirds vote by Congress to pass a navigation act, was a severe blow to the shipping interests of New England, while the South was dissatisfied with the absence of a clause to prevent the laying of export duties by Congress. Much more alarming to the South, however, was the proposal of Luther Martin, of Maryland, on August 21st, to allow Congress to tax or even prohibit the importation of slaves. The whole social and industrial organization of the extreme South was, at that time, based on the institution of slavery, while the welfare of New England depended largely on her shipping. A compromise between these two sections was the logical result.

With a few slight exceptions, the clauses of the Constitution all took their origin in the committee of detail, who reported to the Federal Convention of 1787. Randolph of Virginia, in his committee draft, in conferring the legislative power to raise money, made it subject to the exception: "No taxes on exports." The right to regulate commerce was also made subject to the restriction that "(1) A navigation act shall not be passed but with the consent of two-thirds of the members present of the Senate and the like number of the House of Representatives;" and to the exception:—"(1) No duty on exports," "(2) No prohibition on the importation of such inhabitants or people as the several States think proper to admit," "(3) No duties by way of such prohibition." The committee of detail reported as follows:

"Article 7, Section 4. No tax or duty shall be laid by the legislature on articles exported from any State; nor on the migration or importation of such persons as the several States shall think proper to admit; nor shall such migration nor importation be prohibited."

"Section 5. No capitation tax shall be paid, unless in proportion to the census hereinbefore directed to be taken."

"Section 6. No navigation act shall be passed without the consent of two-thirds of the members present in each house."

The latter part of Section 4 is in reference to the importation of slaves. When this section came up in the convention on August 21st and 22nd, the first clause was considered and before long agreed to by seven votes to four. Massachusetts, Connecticut, and the Southern States were all for it: New Hampshire, New Jersey, Pennsylvania and Delaware were against it. The discussion was started by the remark that the clause, while it prohibited an export tax by the general government, left the States at liberty to themselves tax exports. It was then suggested to prohibit States from taxing the produce of other States ex-

ported from harbors within their boundaries. This was later inserted in another part of the Constitution, (Article 1, Section 10, Clause 2).

Mason of Virginia, able, experienced and "undoubtedly one of the best politicians in America," thought the provision so important that it was with difficulty he was induced to wait for this clause to be reached. He urged the point strongly and said the Southern States had reason for their suspicion, for the Northern States had a different interest from the Southern ones and had 36 votes against 29 in one branch and eight votes to five in the other branch of the convention. Motions to amend, that is by requiring a two-thirds vote to tax exports were defeated and the clause as given above agreed to.

Then followed a heated discussion on the second and third clauses of this section. Luther Martin of Maryland, wanted to change the provisions so as to allow a tax on the importation of slaves. John Rutledge and the two Pinckneys of South Carolina, were strenuous against any right to tax the importation of slaves and said their section would never agree to the Constitution if such a right were given to the general government. Ellsworth and Sherman of Connecticut, were for leaving the clause as it was reported, while Wilson of Pennsylvania, said that as the clause stood all imports were to be taxed except slaves, thus in effect, putting a bounty on them.

Mason of Virginia, was most strong for conferring on the general government the power to prevent the increase of slavery. "The infernal traffic," he said, "originated in the avarice of British merchants. The British government constantly checked the attempt of Virginia to put a stop to it." He lamented that "Some of our Eastern brethren had, from a lust of gain, embarked in the nefarious traffic." The dispute grew warm and several threats were made that the plan would fail if the general government were given the power to prohibit. Gouverneur Morris of Pennsylvania, wished "the whole subject to be committeed, including the clauses relating to taxes on exports and to a navigation act." "These things," he went on, "may form a bargain among the Northern and Southern States."

That part of section 4 not yet approved and sections 5 and 6 were then referred to a committee of one from each State. This committee reported on August 24th, and after a discussion continuing through the better part of a week, the matter was referred to the committee on style and finally reported as the fifth, first and fourth clauses respectively of Section 9, Article 1, as follows:

"The migration or importation of such persons as the several States now existing, shall think proper to admit, shall not be prohibited by congress prior to the year 1808; but a tax or duty may be imposed on such importation not exceeding ten dollars for each person."

"No capitation tax shall be laid unless in proportion to the census hereinbefore directed to be taken."

"No tax or duty shall be laid on articles exported from any State."

On September 13th another change was made in the fifth clause, removing the word "several" in relation to States and substituting "any of," so that the clause read as follows:

"The migration or importation of such persons as any of the States now existing, shall think proper to admit, shall not be prohibited, etc."

Charles Pinckney based the real distinction between the States upon the divergent economic interests of the North and South. A sharp line of distinction began to be drawn between these two sections, the interests of which Butler declared "to be as different as the interests of Russia and Turkey."

The antagonism between the Eastern and Southern States was settled so far as the convention was concerned, by this compromise, the effects of which are just beginning to be fully comprehended. The Eastern States had become convinced of the necessity of the regulation of commerce by the general government and their conviction was shared to some degree by the Middle States and Virginia, the passage of a navigation Act by Congress seemed to them to be highly desirable. Georgia and South Carolina on the other hand, by reason of their rice and indigo culture, deemed it absolutely essential to their welfare that the importation of slaves should not be prohibited. Charles Cotesworth Pinckney declared that a vote to abolish the slave trade would be received by South Carolina as "a polite way of telling her, she was not wanted in the Union." As it was necessary to retain the support of these two States and as the belief was prevalent that slavery would soon die out, the clause as above stated was allowed to go through.

Whitney's invention of the cotton gin had not at that time raised cotton to the position of king and had not made it the great staple product which demanded slavery as an economic necessity.

Edwin R. A. Seligman, of Columbia University, in his book on "The Shifting and Incidence of Taxation," says: "An export duty ordinarily falls on the citizen of the exporting country. But if the duty is imposed on a commodity of which the country has monopoly, and still more if the demand for this monopolized commodity is comparatively persistent, it may happen that an export tax will be shifted to the foreign consumer. It is noteworthy that the chief examples of export duties still to be found are those of duties on articles which approach the conditions of monopoly supply. Such are, for example, the export duties on opium in India and on guano in Peru. But it is to be observed that the cases of perfectly stable demand, even for a monopolized article, are exceedingly rare.

"In the general proposition laid down above no reference was made to the conditions of the demand; it was assumed that demand would remain constant. But this assumption is obviously not the only possible one. In order fully to consider the changes in price caused by a tax, we must therefore regard the situation more closely from the point of view of the effective demand.

"We speak of the demand for the commodity as elastic when a change in price produces an alteration in demand. In such a case if the price goes up, the demand falls off; if the price goes down, the demand increases. There are as many degrees of elasticity in the demand for various commodities as there are variations in human wants and in the ability of men to satisfy those wants. On the other hand, if the demand for a commodity is not variable, the inelasticity may assume two forms. The demand may be inelastic in the sense of being constant, so that it always remains the same; or it may be inelastic in the sense that any attempted increase completely destroys the demand. We shall thus have to consider three possible cases, taking up first, under the heads A and B, the two forms of inelastic demand.

"A. If the tax is levied on a commodity which the consumer must have and which they are willing to pay for at any expense, the demand will not increase. With such an invariable demand the price of the commodity will rise by just the amount of the tax. The consumer will thus bear the whole burden. Practically, this is true of only a few commodities. In a large number of instances, however, prices may rise considerably without greatly effecting the demand. Such would be the case to some extent, at least, with absolute necessaries as well as high priced luxuries. The demand for the former is not apt greatly to diminish unless people starve. The effect of a tax on such commodities would rather cause a diminution in the most elastic demands for comforts, or in that for the less absolute necessaries. But the demand for absolute necessaries depends chiefly on the size of the population, not on the price of the article. In the class of high price luxuries, again, a tax, unless it be utterly exorbitant, is not likely to restrict consumption to any great degree. Those who are generally willing to buy such luxuries are not quite so likely to be held back by any probable increase of price as the purchasers with a slightly lower standard of life. Of course, a decided decrease in the price of luxuries will have the effect of virtually removing them from the category of luxuries and putting them into that of comforts. But as long as the price remains so high as to constitute them real luxuries, the demand becomes relatively inelastic. It may, in fact, be laid down as a general rule that in the case of necessaries, as well as that of expensive luxuries, great alterations of price go hand in hand with slight variations in demand; while in the case of moderate comforts, small changes of price are accompanied by considerable variation in demand. In the former case, then, that of absolute necessaries and some expensive luxuries, under the imposition of exclusive taxes there will be less migration of capital from the industries concerned because profits tend to remain constant. The tax will, in the extreme case, be shifted in its entirety to the consumer.

"What is only partly true, however, in actual life, of absolute necessaries and expensive luxuries, applies in a far greater degree to what are called complimentary goods. For even in the case of luxuries there are generally some purchasers at the margin of doubt, who will be dissuaded from buying, and who will be tempted to substitute some other commodity if the price of the article rises. When, however, as frequently happens in industrial enterprises, we have two or more commodities which have to be joined in production to accomplish a desired result, the one supplements the other, and cannot be discussed without serious loss. Familiar illustrations of such complimentary goods are pen, ink and paper; needle and thread; cart and horse; bow and arrow. Almost every industry on a large scale has its graduations of such complimentary goods. Even here, of course, there is no insuperable bar to the use of substitutes. But the price of the complimentary goods must rise far higher than would be the case with an ordinary commodity, before the purchaser will be driven to accept a substitute. When a tax is imposed on only one or two or more complimentary goods, we approach the conditions of inelastic demand. A tax on one or two complimentary goods, for which substitutes are found with difficulty, will thus tend to be shifted to a greater degree to the consumer.

"It is interesting to observe that a tax on one of the complimentary commodities which will raise its price, tends to lower the price of the other commodity. If a tax is imposed on commodity A, which acts as a substitute or rival for commodity B, thus raising its price and diminishing its consumption, some of the demand previously satisfied by A is now transferred to B, and this augmented demand for B tends to raise its price, although by much less than the increase in A. A tax imposed on A thus raises the price of both A and B, that of A by less than the tax and that of B by less than the increase in the price of A. If, however, A and B are complimentary commodities when the demand is so correlated that they must be used conjointly, the increased price of A consequent upon the tax will not lead to any increase in the demand for B nor therefore to any rise in its price. On the contrary, to the extent that the demand for A is diminished at all by the increase of price, the lesser demand will transfer itself to B, and since the lesser demand for B is not counterbalanced by a tax, the price of B will fall. Thus while a tax on one or two rival commodities will increase the price of both, a tax on one or two complimentary commodities is apt to increase the price of the taxed commodity and to lower that of the untaxed commodity.

"B. We take up next the other case of inelastic demand, that namely, where the price of a commodity before the imposition of a tax has already reached the limit of the effective demand, and where an attempt to increase the price by any portion of the tax would totally annihilate the demand. Although such cases are exceedingly rare in practical life, and represent a theoretical possibility rather than an actual fact, they deserve at least a passing mention. The commodities must be sold at the accustomed price, or not at all; the price cannot rise. In such a case the tax cannot be shifted: the whole weight of the tax would fall on the producer. This will, in the long run, involve a decrease in production. The old producers will lose, and no capital will be invested. Even if the supply is diminished, however, the price cannot increase; for, by the supposition, consumers will prefer to forego consumption rather than pay a higher price. The net result will be a cessation of production with an intermediate loss to the owners of fixed capital in the business. Under no circumstances can such a tax be shifted.

"C. If, thirdly, the demand is elastic, as in the case of minor luxuries and of all comforts,—that is, of the general mass of commodities,— in the sense that the old price before the imposition of the tax, falls below what some of the consumers will, in an extremity, be willing to pay, while the new price, including the tax, exceeds what a part of the consumers can afford to pay, the tax will be divided between the consumer and the producer. The proportions in which this division will take place will depend, so far as this element is concerned, chiefly on the elasticity of the demand. The more persistent the demand, the greater is the proportion of the tax which the producer will be able to add to the price; the more sensitive the demand, the smaller the sum by which he will find it profitable to increase the price. In other words, the greater the elasticity of the demand, the more favorable—other things being equal—will be in the situation of the consumer.

"All changes in price, however, depend ultimately on the relations between demand and supply. Having just discussed the variations due to the elasticity of demand, what

shall we say about those due to the elasticity of the supply? At the very outset, we may mention those comparatively insignificant cases in which no increase of the supply is possible. This would be true of old works of art, of choice wines of a particular vintage and of similar articles. No matter what the inducement may be, the supply is inelastic, since it cannot respond to any increase in demand. Under such circumstances, the extent to which the tax will be shifted to the consumer will depend on the conditions mentioned above under A and C.

"In ordinary cases, however, the supply possesses some degree of elasticity; but the conditions affecting elasticity of supply are somewhat more complicated than those affecting elasticity of demand. It may, however, be laid down as a general rule that the elasticity of supply depends on two conditions: first, the extent to which differential advantages of production affect the supply of the commodity; and secondly, the ratio of product to cost, or the law of return to which the industry is subject. When it is said that the elasticity of supply "depends on" these considerations, no attempt is made to prejudge the question whether it varies directly or inversely with these conditions.

"There is however scarcely any commodity for which some substitute, even though it be incomplete, cannot be found. To the extent that this is true, more and more of the export duty will be borne by the monopolist exporter for fear that the decrease of sales, even at a higher price will lower maximum monoply revenue."

As being of especial interest at this time we reproduce herewith the opinions of a number of cotton manufacturers on this subject of placing an export duty on raw cotton.

Capt. E. Lang, president and general manager, Lang Mfg. Company, West Point, Ga.:

An export duty on cotton would cause retaliatory measures by foreign countries and no one could foresee the end. If with cotton at our very doors, we cannot compete with the foreigner, then there is something radically wrong in the efficiency and cost of our producing.

Office of Fuller E. Calloway, Lagrange, Ga.:

We do not think that an export duty on cotton would be a good thing, or calculated to serve any of the interests involved. In the first place, cotton does not come within the same class of products as that on which export taxes are usually levied as for instance, the German export tax on potash. As we understand it, export taxes are levied to act as a check on the exhaustion of natural resources, such as minerals, etc., where the supply will not be renewed. It will readily be seen that cotton does not come within this category, as it is a product of cultivation and the supply is renewed from year to year with each season's crop. It is the chief item in keeping up our favorable foreign trade balance. The fact that we have practically a monoply on its production gives us sufficient advantage and any unusual or extraordinary tax on its exportation which might be calculated to check consumption abroad, or to cause foreign spinners to look for and probably develop other sources of supply would certainly not inure to the benefit of the American farmer in the long run.

Another phase of the question which should receive due consideration is that the foreign spinners can only afford to pay a price for the raw material which will admit of their selling the manufactured product on a reasonable margin of profit. Supply and demand—in which price is an important factor—governs the consumption in the long run, and an export tax would probably only resolve itself in the end to the government getting a portion of what the farmer now receives in the way of selling price. Agriculture necessarily being our mainstay commercially, any tax out of the ordinary calculated to reach the farmer would seem inexpedient and unwise.

J. D. Massey, treasurer, Eagle & Phoenix Mills, Columbus, Ga.:

Such a duty, in my opinion, would be highly undesirable. The slight temporary advantage that the American manufacturers might derive from it would in the long run probably bring a great many more disadvantages, not only to the manufacturers themselves, but to the Southern farmers. In the first place, such a duty would be unfair to the producer of cotton as compared with the producers of wheat, corn and other American agricultural products. He should have the same right that they have to get the best price possible for his products in all the markets of the world without impediment.

Again, such a tax would stimulate and intensify the efforts of people all over the world to develop other cotton growing sections, and while we view with much complacency our position as the fancied monopolists of cotton production, it is still a fact that America produces only about 55 percent of the world's output. Such a tax would be simply to raise up still greater competition against the American Farmer in Egypt, India, South America, and elsewhere.

Furthermore, I do not see how an export tax would greatly benefit American manufacturers excepting simply in "Bearing" the price of cotton temporarily. The American manufacturers as a whole make no serious effort to get business in competition with European mills in the export trade; hence, at present the American mills are not greatly interested in the trade of foreign mills, excepting in the United States; and if the American mills, in their own home markets, with a protected tariff on goods and with cotton grown at home, cannot hold the home markets against the European mills, then it is time for us to quit business and go at something else.

I do not think that the German potash export duty furnishes an adequate comparison. In the first place, potash is a natural deposit, restricted to a very small territory, so far as we know at present and the output cannot be enlarged until new deposits are discovered. On the contrary, it is simply a matter of cultivating and irrigating more land in the country now producing cotton, to enlarge the cotton output. And in addition to this, an export tax on American cotton would stimulate the search for new cotton raising territory now unknown.

And this very German potash export duty illustrates the unwisdom of such imposts very clearly, when it is recalled that in the United States and in perhaps other countries, intense efforts are now being made by reason of that tax, to discover other deposits of potash. It is reasonable to believe that other deposits must exist somewhere, and the higher the export tax on the known deposits, the greater will be the efforts directed towards finding other fields now unknown. Thus it is obvious that in all probability this German export tax will ultimately react disastrously upon the German proprietors by creating formidable competition in other parts of the world where now they have none and where they probably would not have had for many years, had the consumers not been goaded into the search by what they conceive to be a burdensome and unjust tax.

In a like manner, while the cotton export tax might afford some temporary relief to American manufacturers by cheapening cotton, the ultimate result would be harmful for the double reason that the tax would soon be unavailing, because of the increased production elsewhere and because of the temporary and artificial impetus in the American cotton goods trade would cause the building of competitive mills right here in America.

E. W. Swift, president, Muskogee Mfg. Co., Columbus, Ga.:

This question of an export duty on raw material is an interesting question and one well worthy of earnest consideration and wide spread discussion. As regards our own views on the subject, we are of course inclined to consider favorably any means or measures that will redound to the benefit of the American manufacturer; therefore to the benefit of the farmer and to the American people at large. Of course, the plan proposed of an export tax on cotton, would have to be considered in a broad way and as to how it might effect our trade and treaty relations with foreign countries.

There is considerable talk of revising the present tariff on cotton goods. As far as we can ascertain, it certainly does not give any unfair or undue protection to the American manufacturers, if the present price wage scale, short hours, and better living conditions of our laboring people are to be maintained. A reasonable export tax on cotton would undoubtedly greatly benefit the American manufacturer, without any disadvantage to the cotton growers of the South and to the domestic consumers and would give us a chance to successfully compete with the English and German spinners in the markets of the world without reducing the wages of our laboring people.

As to whether it would be a moral and ethical thing to do as a nation, would be a question to consider, but it would seem that if Germany is justified in levying an export duty on potash, which amounts to a tax of millions of dollars to the American farmer, particularly to the Southern farmer, and if Brazil is justified in regulating the price of coffee and is now considering an export duty on rubber, we as a nation would be equally as justified in levying an export tax on cotton. We would certainly be glad to see this question discussed in all its features and if it is determined that it is the right and proper thing to do, our government could then undertake it.

S. C. Smyly, general manager, Eastman Cotton Mills, Eastman, Ga.:

An export duty on cotton would no doubt benefit the manufacturers of this country and especially those engaged in the manufacture of the finer fabrics. It is the opinion of the writer that this matter should be brought to the attention of our representatives in Congress, with the idea in view of imposing a duty on export cotton sufficient to offset the advantages that our foreign competitors have and thus afford the American manufacturers a square deal in the export trade. The South has no competition of importance in raising the raw material, and an export duty could not possibly endanger the Southern farmer. The foreign manufacturer is compelled to buy our American cotton, because there is no other source from which to obtain their requirements. The South is losing millions of dollars annually as the result of improper business methods or the lack of methods along the line of foreign countries and the North. The export duty is one thing that should have immediate attention and nothing is being done to agitate this. It seems that when a body of Southern manufacturers assemble for the purpose of discussing these important questions, the usual result is that nothing has been accomplished really worth while.

What we people of the South and especially those engaged in the manufacture of cotton fabrics should do, is to get at something specific and definite and make a move in some direction whether right or wrong, or there will never be any improvement in the cotton mill business in this country. Why is it the manufacturers do not get together and have a uniform price for their goods? This can be accomplished just as easy as falling off the proverbial log and as soon as this is done they will realize a profit on their sales. It is not the question of over production of cotton cloth, but there is really a scarcity. Cotton mills have been able to sell their products all along but upon an unprofitable basis. If they were in a position to put a price on their products as all other manufacturers are, they would have sold the same quantity of goods at a profit. Unless the Southern manufacturers devise some means of handling the sales of their products differently from the way they now do, they will never realize any profit.

The cotton manufacturing interest of the South must realize the fact that they should exercise their own inherent right of dictating the terms on which their goods should be sold. Go to the shirt manufacturer and he will tell you the price of his shirt and if you purchase this article, you pay his price. Go to the manufacturers of cotton mill machinery and they will tell you their price per loom and per spindle for the equipment desired and if you build a mill you pay their price and according to their terms. If machinery is high they inform you that it is because iron and steel have advanced in price, or labor is higher. Everything else is along the same basis excepting the cotton business of the South. The shrewd buyer of the North dictates to the Southern mill prices and terms. The cotton fabric commission merchant is a necessary evil to our Southern mills and the evil part of him can be eliminated, providing the cotton mills will come together and have some say about the price they should receive for their product. I do not think the trouble lies with the commission men and I believe they are one of the most important connections of the cotton mills.

While I think we should desire to retain their services, yet at the same time no one should dictate the price of the manufactured fabrics except the manufacturers themselves and as it stands now they have no authority whatever. They say the manufacturer must prepay the freight. This is not right, yet the mills do it. There is nothing manufactured in the United States except cotton goods on which the manufacturer pays the freight. They say the manufacturers must allow three per cent. cash discount and they allow it. They also say that the cloth is worth five cents per yard and the mills accept it, often times at no profit and frequently at a loss, and then they complain that they are losing money. The Southern cotton manufacturer is derelict in his business. Excepting in the physical operation of his business, he has no say. The shrewd cotton speculator puts the price on the raw material and the manufacturer has to pay that price and some one else tells him at what price he must sell his products, irrespective of what the cotton costs. Oftimes when cotton is high, they put a low price on the goods and the mills sell them at this price. I am a Southerner, but

must admit that our Northern brothers have it on us when it comes to doing business.

Not only the North, but it seems that everywhere else everybody is talking curtailment. This will do no more good than giving a patient morphine for stomach ache, as soon as the effects of the morphine dies out, the patient's stomach hurts just as bad as before unless some other remedy is used. They need permanent relief. It is right that they should have a profit on their products and all that is necessary is to get together with a central office and regulate their prices toward this end.

Charles T. Wolfe, president Puritan Cordage Mill, Louisville, Ky.

I think it is a most interesting and vital question to the cotton mills of this country when you ask if we think it would be wise to put an export duty on cotton. There is no step that could possibly be taken just now that would in our judgment so far relieve our mills of their terribly strained condition. Foreign countries, particularly Japan and Germany, pay their labor a very small wage in comparison to ours. As these countries buy their cotton as cheap as our mills and their labor a great deal cheaper, the natural result is that foreign mills are now controlling the sale of the finished article in the world's markets.

In fact we have known cases where speculators shipped cotton to foreign mills for less money than our home mills could purchase it; this in order to control the price in America. Putting an export duty on cotton would have a far reaching effect on such dangerous speculation. Certainly some radical step is necessary for the protection of this big industry of our country and it seems to us that no protection could be fairer than that of making foreign mills pay part of our laborer's wage. The foreign mills are compelled to have a big portion of the American cotton crop in order to run. Why should we not make them pay for it? It seems that we are throwing good money away not to take some advantage of this natural situation. American mills cannot compete with English or Janapese mills today except at an actual loss and such a condition continuing will mean a calamity, both to the mill owner and the mill laborer. Any one who is not familiar with the cotton mill situation of America, has no idea of its deplorable condition. For our part we trust you will succeed in stirring up enough interest in this question to have it put before Congress in short order. We are strongly in favor of it.

J. W. Spain, president, Atlantic & Gulf Mills, Quitman, Ga.:

So long as Germany insists upon an export duty on potash salts which are essential to the growing of cotton, an export duty on cotton to that country would probably be popular and do no one any harm. There would be no way to prevent her getting the cotton though, after it had gone out of this country. I do not believe that an export duty on cotton would be popular or profitable and would do the mill business of this country little good.

Lawrence S. Holt & Sons, Aurora Cotton Mills, Burlington, N. C.:

We have not given the matter of export duties enough thought to venture an opinion. Legislation along the plan outlined might do some good. Would not the proposed plan be fruitful of an endless amount of political harangue? Among other things, at the present time, there is undoubtedly an overproduction of politicians and policies.

T. I. Hickman, president and treasurer, Graniteville Mfg. Co., Augusta, Ga.:

This is a big question and I doubt if anyone could ever get a bill in Congress favoring an export tax on cotton as the farmer would naturally not stand for it. Besides this I am free to say that I do not know whether or not it would help the manufacturer. I think it is doubtful, as the munipulators would handle it in such a way that neither the farmers or ourselves would ever get any benefit from it and also it would create complication with other countries. Frankly speaking, I think the whole thing is impracticable.

E. Sternberger, president, Revolution Cotton Mills, Greensboro, N. C.:

I do not approve of an export duty on cotton, as this would stimulate the raising of cotton in other countries to a large extent and would eventually be injurious to the cotton producing interest in this country. There are great efforts now being made in this direction by Germany and England and this would necessarily induce them to make still greater effort to raise cotton in their own colonies, without having to come to America for it.

J. W. Watts, treasurer, Watts Mfg. Co., Liledoun, N. C.:

In regard to the question of an export duty on cotton, will say that under the existing circumstances I think that a small duty on cotton exported to the foreign trade would help the American manufacturer a great deal in competing for the world's markets.

D. E. Duggan, manager, Cochran Cotton Mills, Cochran, Ga.:

An export duty on cotton sufficient to offset the advantages of cheaper manufacturing plants, cheaper labor, and lower transportation charges that foreign countries have over us, appears to us as if it would certainly be a boon to cotton manufacturing in this country. New mills would be built. Much more of our cotton would be manufactured at home and new life would be given to the industry. But there are difficulties in the way of an export duty on cotton. It is conceded that supply and demand of any commodity, eliminating circulation on the exchanges, governs the price of the commodity. This country supplies approximately two thirds of the cotton of the world and consumes in its mills less than one third, while foreign countries supply one third and consume in their mills more than two thirds; hence the foreign demand governs the price of cotton. English mills are now selling goods on a basis at which they can pay 16 cents for cotton. If the English mills were required to pay one cent duty on their cotton, they most likely could not pay more than 15 cents for cotton, which means that the cotton producer would receive one cent less for his cotton, or the amount of the export duty. This export duty would also stimulate foreign countries to produce cotton within their own posessions. They, in a measure, would be forced to this, driven by our competition in the foreign markets and this increased supply of cotton would again operate against the cotton producer of this country.

These facts will cause much opposition to an export duty on cotton by the cotton producing states and we very much doubt the wisdom of such a duty. However, if the full revenue derived from such a duty was returned to the cotton producing states, to each state in proportion to the cotton produced and expended in education in the rural districts, where educational advantages are most needed,

the cotton grower would get a portion of his loss returned and in such a way that the loss would likely prove to be a gain and not only to the cotton grower, but to the whole country. With some such provision an export duty on cotton would likely be viewed more favorably.

MacMillan C. King, treasurer, The Pelham Mills, Pelham, S. C.:

A small export duty on cotton is the only way in the world in my opinion that the American cotton manufacturer can be assisted and indeed to my mind placed on a parity with the foreign spinner. As matters now stand the English spinner if I am correctly informed, has about these advantages: He gets his raw stock about as reasonably as we; he buys his cotton stripped, paying for no bagging and ties; he has much cheaper labor; he can buy a contract in the Liverpool market which is a contract; the American spinner cannot buy a contract for actual cotton in the New York market, which is a paper market; the American buyer is confronted with high labor costs; the American buyer, by law mark you, has to pay for some 22 pounds of bagging and ties; and the American buyer when the railroads are through landing his cotton has paid about as much for it as the foreigner.

The above four reasons in favor of the foreigner as against the American manufacturer should be convincing, not to the advantage, but the necessity of a small export duty on cotton. The cry will probably be raised that cotton will be grown elsewhere. Our foreign cousins have been for a long time trying to do this without success. On the face of your proposition as to whether an export duty is advantageous or not, can it not be answered simply by looking at the unreasonableness of a people raising the most valuable crop in the world and having to send it thousands of miles away to be manufactured by pauper labor and sold cheaper to the American people than their home manufacturers can afford to sell it?

If an export duty is fixed on cotton the American people will fix the price of the staple and they will get the benefit of that price. Again it will enable the manufacturer to continue to pay his operatives the handsome wages that he is now paying them, but which in a short time if something is not done will have to be reduced. What is short time, but simply a reduction in the wages in a broad sense. An export duty on cotton would do more to raise the value of manufactured cotton goods than anything I can think of, simply because it would make the foreigners who make and sell the bulk of the manufactured goods to the world, raise their prices from necessity which would put the intrinsic value of cotton on a higher basis.

Cotton today cannot be compared with cotton of ten years ago. It costs more to raise it. It is used for more and better purposes and there has got to be a readjustment along all lines raising the price just a little to the consumer, which will hardly be felt by the ultimate consumer, but will be the means of letting the American manufacturer live. If an export duty was put on cotton it would allow the United States to control the cotton situation, which it does not now do and I think about equalize the American manufacturer with the foreign manufacturer by such export duty, being equivalent to the difference between our labor and that of the foreigner. Should not any true patriotic American citizen thank God that the conditions of our laboring class, are not to be compared with that of any other country and if a government is not for the protection of these very laboring people, what in the world is it for?

By pursuing the policy we are, of allowing this commodity to go out of the country and be manufactured by paupers and returned to us and sold cheaper than we can manufacture it, is simply inviting the destruction of our cotton manufacturing and eventually reducing our scale of wages to the cheap wages paid in other countries. This may not happen in the immediate future as this country is expanding and building so rapidly, that even though the cotton manufacturer was eliminated from the question, labor would find other work remunerative. But there is coming a time and that faster than many of us stop to think, when the population of the country which is increasing and increasing almost as rapidly as constructive enterprises, will in the law of nature outgrow this demand, and it will then be necessary for them to seek employment where no employment is to be found and thus lower the price of wages by the law of supply and demand.

J. K. Dixon, president and treasurer, Trenton Cotton Mills,, Gastonia, N. C.:

While it would be of advantage to the manufacturing interests of the South to levy a small export duty on cotton shipped to foreign countries, to offset to some extent the difference in the cost of production here and abroad, the plan hardly appears feasible at it seems to have been the policy of this government since its organization, that all exports go free of duty and it would, it seems to me, require a big upheaval in this country, to change the order of things as fixed by our forefathers, and should a thing of this kind be attempted, there would no doubt, go up a great hue and cry to congress from the cotton planters, defining it as a robber tax directed at them. These are my views but I may be wrong. I will be glad to hear from others better posted.

B. F. Zimmerman, treasurer, Beaver Dam Mills, Edgefield, S. C.:

I have never given this subject of an export duty any thought and am not in position to give a really intelligent answer. On the spur of the moment however, I would say that I would not advocate an export duty on raw cotton, for the reason that first, come the agricultural interests in the South, and while I am entirely interested in the manufacturing industry of cotton, I am democratic enough, I believe, to sacrifice my own interest rather than do anything that would injure the cotton grower, and as I see it this tax would fall largely if not entirely upon the planter.

Claude Gore, vice-president and treasurer, Great Falls Mfg. Co., Rockingham, N. C.:

I have heard that an export duty on anything in this country would be unconstitutional. If this is the case, there is no use discussing this question. I do not think an export duty is good for the country that enforces it. It is only a question of time when this country will resist the Brazilian valorization of coffee by putting a duty on Brazilian coffee. I think an export duty on cotton would benefit this country if the duty was made high enough to force the foreign mill to come to this country, but after this movement was completed, there would be a terrible reaction unless the duty was taken off.

G. W. Thompson, vice-president, Virginia Cotton Mills, Swepsonville, N. C.:

We believe that the product of American cotton mills is now largely in excess of American consumption and that

this disparity is increasing rapidly, therefore any honorable scheme having for its purpose the placing of American spinners on an equal footing with our foreign competitors in the markets of the world, would be most timely and would receive our hearty indorsement and co-operation. Whether an export duty on raw cotton will accomplish this purpose we are not able to state, but it seems to us a move in the right direction.

J. N. Birch, president, Juliette Milling and Glover Mfg. Co., Macon, Ga.:

The writer is of the opinion that an export duty on raw cotton would be neither practical or desirable and would not only tend to encourage cotton growing in other sections of the world, but might tend to destroy the monopoly that we now possess and in addition thereto create a prejudice against American cotton, that to say the least would be undesirable. Individually I am of the opinion that were our tariff duties laid in such a manner as produce sufficient revenue to support the government, economically administered, that the cotton spinning industry of America would be amply able to take care of itself and meet the competition of the European spinners in the markets of the Orient on a very much more favorable basis than now exists.

Geo. A .Mebane, president, Spray Cotton Mills, Spray, N. C.:

Talking about export duty on cotton. It is rediculous. *Reductio ad absurdum.*

James F. MacEnroe, asst. treasurer, Ware Shoals Mfg. Company, Ware Shoals, S. C.:

In regard to an export tax on American cotton I would say that I do not think a measure of this kind would be advisable. It is not legal for a State to impose any prohibitive restrictions on the exportation of its own products. A restriction such as is proposed, would be a violation of the commerce clause of the Constitution. If such a law were passed, I am afraid the Southern farmers would look at it from the wrong point of view and while it would in no way tend to cheapen cotton to the American manufacturer, they would look at it in just the reverse light. Human nature is the same the world over and a breach would be made between the planter and the manufacturer. In addition to this a slight increase in the cost of raw material to the foreigner would not accomplish much. It would make the cost of raw stock higher, of course, but would in no way keep him out of the race. His margin of profit is so great, due to expert help, that he could easily overcome the slight difficulty.

Before this matter of levying an export tax on cotton is considered very seriously, it behooves the Southern manufacturer to increase the efficiency of his help. Comparing the Southern manufacturer with the Englishman of course the Southern mill suffers. In fact the Northern mills are as far advanced over the Southern mills, as the foreign mills are over the Northern mills; and too much attention has been paid to the old cry, cheap help. Efficient help is the most needed thing in the Southern mill today.

James D. Hammett, president and treasurer, Orr Cotton Mills, Anderson, S. C.:

While I am particularly interested in helping to stimulate the business of the cotton manufacturer and to place the same on a basis which will prove to be profitable to the owners of the property and at the same time furnish constant and remunerative employment to the employees, and while I believe that an export duty on cotton would probably stimulate the cotton manufacturing interests of America, more than, perhaps, any other legislation that may be enacted, at the same time I seriously question the advisability of agitating such a duty on cotton, because in all probability our farmer friends would be seriously antagonistic to such a duty.

When an economic problem is put before the people it is difficult for the majority of them to see beyond the immediate results to them and while the cotton manufacturing interests and the prosperity of the same are not only important to the owners of the mill properties and the employees and those dependent upon them, but are also very important to those who raise the cotton, and while I believe anything that would stimulate the cotton manufacturing interests of America would indirectly benefit the farmer, at the same time I do not believe the farmer would favor an export duty on cotton, but through their representatives in Congress would seriously oppose the same.

It is not my purpose as a manufacturer to antagonize the interests of the farmer, but I wish to work in unison with him so far as possible, encouraging him to the best of my ability, to make the best living possible, and hoping from him encouragement to me and those who are under me to make the best living we may and believing an export duty on cotton would make the farming element more or less antagonistic to us, I would prefer not to agitate the subject of an export duty, but urge that our politicians do not interfere with the import duty on cotton goods to such an extent that it will make possible the underselling of American mills on the part of the foreign mills where cheap labor is employed.

I take it that no one wishes to see the scale of wages in America reduced and certainly not to a point where it will be in line with the cheap labor of Europe and the Far East and unless an import duty on cotton goods exists that will overcome the difference between the wage scale in America and the wage scale in Europe, the cotton mills of America will either be put out of business or else a drastic lowering in the wage scale be forced upon them.

If we should lay aside the possible antagonism of the farmers to the export duty on American cotton, I would most heartily favor the same, because with an export duty on American cotton, the American manufacturer would in a very short time regain the trade of the Far East, which has been taken by the foreign mills because of the cheap labor which they employ.

William H. Williamson, president and treasurer, Pilot Cotton Mills Co., Raleigh, N. C.:

I am hardly well enough posted to write on the subject of an export duty on cotton. However, I am inclined to think that it might temporarily benefit the American manufacturer, but it would be an incentive for England, Germany and France to make greater efforts to grow cotton in their colonies. I have my doubts as to the ultimate results. However I feel sure that it will benefit the American manufacturer at least temporarily, and as this same manufacturer has had an awful hard time of it for the last two years, any relief, even of a temporary nature would be welcome. The experiment might be tried out for four years and if it did not work well for the country in general it could be abandoned.

S. B. Sargent, treasurer, The Fidelity Mfg. Co., Charlotte, N. C.:

I think an export tax would help the British and German colonies in Africa in their efforts to raise cotton. I do not see how it would help the American spinner. If you want to help the American manufacturer with Federal tax, why do you not convert your Congressmen and Senators so they will obtain some benefit for their section in the revenue bill now before Congress. If you want protection for American industries, what is the use of beating around the bush. Our Southern Congressmen have been for generations protesting that they were free traders and they did not want any benefits for their section that would come through a revenue bill.

And some of your Congressmen and Senators when the Aldrich bill was up for consideration, admitted that they would not be able to defeat the bill. They admitted that other sections of the country would receive "pie" as the result of said revenue bill, but because of our inherited principles on this subject, we must assume a Spartan attitude and refuse to take "pie" no matter how much we wanted it, and they treated us accordingly in said tariff bill and we were all hungry Spartans until said Congressmen desired re-election and then "pie" looked mighty good to them.

For years other sections of our country have been deriving benefit through the tariff bill because their Congressmen were like the widow who knew what she wanted and was not ashamed to ask for it, while we have been without similar benefits because of our inherited principles on such subjects. Now these inherited principles are all right if we are numerically strong enough to put the whole country on the same basis, but we have not been and never will be able to do this and it therefore seems to me a foolish attitude that our Congressmen should make us suffer for generations by refusing benefits on which our Northern and Western countrymen have been fattening.

It seems a simple matter. The policy of this nation as determined by the party in control has been that American industry should be protected from foreign competition in our home markets by the imposition of duties in the revenue bill and while other sections have been securing this benefit, we have not. Now I am tired of being a hungry Spartan and I want all the tariff benefits for my section that can be obtained and like the widow, I know what I want and I am willing to go get it regardless of my inherited political principles. I have always been a democrat, but President Taft is a good enough democrat for me and his policy on these matters suits me to a "Tee."

If you are looking for any legislative benefits for the manufacturer do not go hunting for some untried method. Profess openly the fact that you believe Federal aid desirable in this matter and induce your Congressmen and Senators to obtain it in the present tariff bill as other sections have been doing for generations. Now one other thing I want to call attention to, *viz.*, the bulk of the cotton crop in this country is classed as middling upland cotton and practically all of this grade of cotton is used in the manufacture of goods made out of yarns numbering from 30's and coarser and relatively very little of our American upland cotton goes into the manufacture of finer counts. Therefore every Southerner should be vitally interested in a Federal tariff that will obtain the highest possible benefits for such goods, yet it was the concensus of opinion of the manufacturer seeking protection before the last Ways and Means Committee of Congress that goods made of 30's and finer yarns required the highest kind of protection and that goods from 30's and coarser counts required little, if any protection and our Southern Congressmen let it go at that and the tariff bill was made accordingly, with very little if any regard for the fact that the manufacturers using the bulk of our cotton manufactured 30's and coarser.

Now this fault should be corrected in the present tariff bill and every Southern farmer, merchant, manufacturer, and professional man, should be vitally interested in obtaining the highest possible benefits for middling upland cotton and its users. The very few fine goods mills of the South are obtaining tariff benefits designed to protect New England interests and in common with the New England manufacturer using Sea Island, long staple and Egyptian cotton, which is so small a part of our crop, that it obtains no recognition in the quotations of the various cotton exchanges. This opinion may be of no more value to you than it is to me, but for one, I am tired of being a hungry Spartan and will use every personal effort that I can to secure tariff benefits for the section in which I live. If I am called a high tariff man and outside the breastworks, a republican or a populist, let it go at that. I think I am a hungry democrat who wants some relief. This is a personal letter expressing my personal opinion only.

Paul Barringer, treasurer, Tuscarora Cotton Mills, Mt. Pleasant, N. C.:

For years I have thought it nothing more than right and just, that the farmer should receive some recognition at the hands of our national legislators. The question of whether or not an export duty should be placed upon raw cotton is a pertinent and a vital one. If the American people expect to come into their own in the cotton manufacturing and cotton raising industry, then an export duty on the raw cotton will afford them this opportunity. It will be a protection to the cotton farmer, manufacturer and laborer alike.

In the first place, let us take into consideration the conditions as they exist abroad. The old argument has always been advanced ever since America has been a manufacturer of cotton goods, that Germany, France, England, China and Japan, can secure labor in their manufacturing industries for lower wages than America. The idea has always prevailed that because of this cheap labor, the American manufacturer should receive protection against his foreign competitor. Now it is impossible and always will be, for these countries to raise enough raw cotton to supply their requirements. They must therefore naturally look to America for a large part of the raw cotton. The Oriental spinners of cotton have been making very strenuous efforts to grow the raw material successfully, and in sufficient amount so as to be independent of the cotton raised in America. Look at the statistics if you please and note the increased demand for cotton grown in the United States of America. This cotton growing experiment has been and it always will be an ignominious failure.

The very fact that the foreign spinner can secure the raw material as cheap as the American spinner; and the very fact that these competitors of ours have subsidized shipping laws; the fact that ocean freights are far less than railroad freights; the fact that America has no merchant marine worth mentioning to carry our goods out of this country; and the fact that American manufactured cotton goods have been so little known in foreign markets ought to cause the cotton manufacturers to change the methods of

protection. If an export duty on the raw cotton could be properly fixed and then an aggressive foreign business inaugurated, we would be enabled to sell our cotton goods abroad for the same as the Englishmen or anyone else and at the same time pay the farmer and laborer a better price for their products.

The foreign cotton merchant would have to pay for the raw material the same price that the American merchant would have to pay. As it is now the American merchant is compelled to keep the price as low as possible on the raw material so as to compete in a foreign market with the pauper labor of Europe, Asia, Africa and Australia. We will never be able to get the manufactured goods up commensurate with the price of raw cotton, until we can have something to offset cheap machinery and cheap labor. If the export duty on raw cotton be placed high enough, we can then safely take the tariff off the manufactured cotton goods in this country and the price for cotton goods the world over will be placed upon a uniform scale or basis and thereby allow the American manufacturer of cotton goods to compete in the open markets of the world with other manufacturing nations. American merchants would thereby secure an interchange of goods not manufactured out of cotton and sold by them. This business principal would prevail, "You sell to me and I will sell to you, or you buy of me and I will buy of you."

Osborne Brown, secretary and treasurer, Long Island Cotton Mills, Long Island, N. C.:

My views on this subject of an export duty on cotton are not definite enough to venture any advice to others. There is one thing sure in my opinion, we must have some protection to our cotton manufacturing industry to equalize the difference in cost of manufacture here and abroad. I believe that a great majority of the American people will agree with this statement. One of the troubles today is, the manufacturer constitutes only a very small percentage of the people and for that reason are not able to defend themselves at the polls. The American people appear to have gone "trust" mad, and this is doing a whole lot of harm to honest manufacturers. If there are any combinations of trade that are practicing extortion on the American consumer, let them be investigated and if the charges be found true reduce the tariff on the articles thus affected. But because the virtues of the protective system be abused, should be no good reason to do away with the system. The idea should be to correct the abuses.

I am a protectionist and I say turn on the light. I venture the opinion that investigation will discredit some of the statements of our numerous politicians whose principal aim is to create dissatisfaction with the present system for the purpose of obtaining power. If these politicians (I wish I could use the word statesmen, but this is almost an unknown quantity), have anything to offer better than the present methods I would like to see them produce it, but they deal in the abstract and their stock in trade is to "knock." The idea of placing an export duty on cotton is an idea that is comparatively new. If this method of protection would be better to the American people as a whole than the present tariff methods and if there are no legal difficulties in the way, I would be in favor of trying it.

We raise about three-fourths of the world's supply of cotton and it does seem that we should be entitled to arrange for the disposition of this large percentage of the world's cotton to the end that a large portion of this cotton be manufactured at home. At least we should arrange our laws regulating the importation of cotton goods or the exporting of our raw cotton in such a way that our own cotton manufacturers could enjoy a reasonable return on their investment. With the present system, the cry goes up that the tariff is a tax and the American people pay this tax. If an export duty is placed on cotton the foreigner will be paying the tax. I do not know how this method of protection would appeal to the American cotton farmer, but it does seem that it would work no hardship to him.

Lawrence MacRae, secretary and treasurer, The Iverness Mills Co., Winston-Salem, N. C.:

I find upon investigation that the levying of an export duty is forbid by the Constitution and I am of the opinion that the people of this country would not authorize a change of the statute at this time. The legislators of the present time at our capital seem to be a level headed and conservative body of men, and I feel that the cotton manufacturers interests are safe in their hands. Until there are signs of extreme radicalism on the part of the majority at Washington and indications that the cotton manufacturers' interests are imperilled, I rather believe that we had better let the export duty agitation rest a while. It will certainly at best not tend to nourish the good will of those of our foreign friends who are regular buyers of our cotton.

J. J. Litlejohn, Jonesville, S. C.:

I can see no other way to meet foreign competition, except the plan of an export duty on raw coton. You will, however, hear a howl from our farmer friends.

James P. Gossett, president and treasurer, Williamston Mills, Williamston, S. C.:

The question of imposing an export duty upon raw cotton is so new and will admit of such a broad discussion that I hardly feel safe in giving an opinion off hand upon so important a subject. However upon "first blush," so to speak, the idea appeals to me very forcefully, for if we are to continue our present system of protecting labor in this country, which we should, then something must be done to further protect the manufacturer who employs protected labor, in order that he may successfully compete in the foreign markets with the manufacturer who employs pauper labor; and I can think of no better way in which this can be done than by imposing an export duty on the raw material consumed by the foreign manufacturer. The duty which he would be compelled to pay on his raw material would offset in a measure, the advantage which he enjoys over the American manufacturer by reason of his cheap labor.

Furthermore I believe that all countries enjoying a monopoly of any of the great commodities entering into the world's manufactures like cotton, will sooner or later accept the German idea of imposing export duties on same as a source of public revenue. Why should they not? If we are to pay tribute to Germany for our supply of potash, which I think is right, why not Germany pay tribute to America for her supply of cotton? Is not this reciprocity?

Lawrence S. Holt, Jr., secretary and treasurer, Union Cotton Bagging Corporation, Norfolk, Va.:

In my opinion the levying of an export tax on American cotton would be of very little benefit to the American manufacturers. While temporarily it might create an ad-

vantage to American spinners in the cost of the raw product, the ultimate outcome would be to encourage and assist the efforts of our foreign competitors to produce cotton in their own colonies and with their present subsidies and governmental assistance, it is probable that American cotton would then come into competition with foreign cotton to a much greater extent than at present.

Our cotton exports make up such a huge item in our annual trade balance, amounting to nearly four hundred and sixty-one million dollars for the year ending August 31, 1910, and it is doubtful if it would be wise to take any steps which might disturb existing conditions. Our energies could be directed with much more profit toward the development of markets for our goods in competition with those of other countries, than the placing of restrictions on the export of our greatest crop.

To sum up, if the export duty was very small, the effect on the foreign spinners would not be noticeable. If it would be large enough to cause any material advance in the cost of their cotton, it would merely act as a fresh incentive to their already almost desperate efforts to raise their own cotton and with their advantages of subsidies and adequate merchant marines, we believe it would not be a great while before they would be much less dependent upon American cotton than at present.

COTTON invites discussion from all readers who may desire to express themselves further on this subject.

NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

Semi-annual meeting number 91 will be held at the Equinox House, Manchester, Vermont, on September 27th, to 30th, 1911. The sessions will be held in the Casino, diagonally opposite the Hotel, beginning at 8:15 p. m., Wednesday, September 27, at which occasion His Excellency, John A. Mead, LL. D., Governor of Vermont, will give an address of welcome. President Franklin W. Hobbs will give his address after which he will informally receive the members and ladies.

The full programme will not be issued until the meeting but papers are expected on the following subjects: Alignment of Shafting and Machinery; Cleaning Machinery by Compressed Air; Conversation of Water Powers; Cost Methods in Cotton Manufacturing; Executive Management of the Textile Plant, and Its Relation to the Market; Illumination of Textile Mills; Introduction of Chemical Bleaching of Cotton Cloth into the United States; New Roller Leather; New York Cotton Exchange in its Relation to Merchandizing Cotton; Organization of Carding Department in Cotton Mills; Services of the Department of Agriculture in the Improvement of Cotton; Textile Education from a Manufacturer's Standpoint; Uniform Contracts; Weaving-Shed Roofs; and Work of the Tariff Board in Connection with the Cotton Industry.

In the whole of Ireland there is but one cotton-spinning mill. The company operating this mill is capitalized at £10,000 ($48,665), and employs 25,000 spindles. Only the finer counts of thread are spun, and for these cotton of long fiber is used, such as the Egyptian and sea-island staples, the annual imports being about 224,640 pounds. There is only a small amount of this mill's product sold in Belfast, and it is used for the fine union cambric, the remainder being exported to England and Scotland.

A PARALLEL CASE.

BY GEO. F. HOFFMAN, PHILADELPHIA.

Reducing the tariff on products from the cotton mills is a very serious question to the manufacturers. It comes doubly hard as the mill operators have had very little encouragement for some time. In regard to protection, there is probably not a cotton mill that would have been built in the South, except for protection, and they still need it, for they cannot compete with foreign labor. This has been put plainly before the representatives at Washington, and they have been requested by the mill men not to vote for the reduction of the cotton tariff. It seems that most of them have paid very little attention to the request and voted for the reduction in tariff. By doing this, they have used their power to make it still harder for the cotton mills. The kind of representatives that the cotton manufacturers should use their influence to send to Congress are those who will watch their interests, and the name of every congressman who voted for the reduction on the cotton tariff should be put on record, and the kind of support he gave the cotton mills should not go unnoticed.

A representative who does not realize what is the best for the district he represents, is a good fellow to let stay at home. However, some congressmen will figure that they were sent to Washington to vote for reduction in tariff, and by so doing they have fulfilled their obligations. The story is told of a "Dutchman" who was on the jury of a murder case. There was no doubt as to the guilt of the prisoner. The "Dutchman" was seen on the side and was told to insist upon a verdict of second degree, it made no difference what the others wanted to stand out for second degree if it took six months. The case was finally put to the jury and they retired. They were out for one day and night and part of the next day, and finally brought in a verdict of second degree. Somebody asked the "Dutchman" what made them stay out that long? He said, "That they all wanted to acquit the prisoner but he stood up for second degree, and finally brought them over," and this seems to be about parallel with the way this tariff business has been handled.

It is this sort of method that is creating the down-fall of business. The senators and congressmen who voted to reduce the tariff on cotton goods have not shown the support to the industry that President Taft has shown by vetoing that bill. The latest mania of the Southern representatives is to urge the farmer to hold his cotton and keep prices up. It is evident that these fellows are after the farmers' votes.

The New York Chamber of Commerce announces that during the past two months it has had inquiries from correspondents abroad for canned goods, woolen and cotton goods, gloves, corsets, carpets, shirts, leather, cutlery, chemicals, bronze powder, wire, paper, lead pencils, borax, crackers and biscuits, olive and cottonseed oils, nut oils, oleamargarine, clocks, chain grates, goat and sheep skins, agricultural implements and machinery, electrical goods, structural iron, enameled ware, typewriters, turpentine, rosin, opium, bird seed, cigarettes, woven labels, buttons, laces, embroideries, braids, bindings, Italian cloths, silk and satin, aniline colors, ostrich feathers, produce, and cheese.

Mill Conditions and Market Reviews.

SOUTHERN MILL SITUATION.

(*Special Correspondence.*)

With the proposed cotton revision bill vetoed, and no chance of action before the next session, there is a greater feeling of security among Southern mill men. What R. M. Miller, chairman of the Tariff Committee of the American Cotton Manufacturers Association had asked was a thorough consideration of the question before action was taken. The committee protested against shotgun revision, insisting that all sides, and phases of the issue be thoroughly gone into before the cotton schedules were attacked. Especially did they urge careful treatment at this time, since in the history of cotton milling, conditions have not been worse than they are to-day. It is hoped that the committee will have an opportunity to personally appear before the congressional committee at the next session and plead their case. In the meantime the campaign of education is on, and the committee is sending out much valuable data relating to the textile industry and the tariff. It is urged that there be no discrimination. With wool protected almost forty per cent and cotton protected only ten per cent, manufacturers of cotton insist that they not be forced to carry burdens not required of other industries. Their strongest argument is, that if the cotton schedules are to be revised that an equal revision be made in other articles entering into the manufacture of cotton. In other words, they protest against a system which puts up prices on everything they buy, but which lowers prices on what they have to sell. They ask for a square deal,—nothing more.

The improvement in export trade is being felt and it gives hope to exporting mills, which have suffered from depleted trade for two years past. The fact that by reason of heavy curtailment in America and England, stocks have been greatly reduced and prices are reverting to the normal is another encouraging indication. Already there is improvement in conditions affecting the English mills, and it is confidently believed that the effects will reach America by fall. It is urged that there is little stock on hand; that the world will demand the products of the mills and this at a good price, and believing thus, many Southern mills are availing themselves of idle periods to install new machinery, preparatory to handling the business which they confidently expect during the fall and winter.

As noted in the last issue of COTTON, August has been marked by heavy curtailment, and yet it is difficult to estimate the extent, for the simple reason that in the majority of cases mills follow an individual policy. For instance, take North Carolina: It has just been announced that after a suspension of two weeks the large mills at Durham, N. C., the Erwin mills, have resumed operations. This news comes along with other statements of mills closing down. In South Carolina a great many mills have inaugurated, or rather repeated, curtailment policies during August. It was agreed by the South Carolina association, several months ago, to curtail two weeks in July and two weeks in August, and this agreement has been followed out. Besides several big mills, notably one or two in the Greenville section, have announced that they propose to shut down part of their machinery during the first week of September. Others announce a four day policy. And so the story goes. The mill which finds it possible to run, runs; the one which finds business unprofitable, curtails. Roughly estimated, curtailment during August has amounted from forty to sixty per cent, and in many instances curtailment will be carried on through September. Eighteen or more new mills organized during the past year show that capitalists have not lost faith in the future of the industry. Other mills are being planned and despite the unfavorable year the building record is not behind that of other years .

NEW ENGLAND MILL SITUATION.

(*Special Correspondence.*)

The month of August closes with fully half the mills idle, and most of them will not resume operations until after Labor Day. The curtailment of production has now touched about all of the largest plants, the Lonsdale and Knight mills of Rhode Island having adopted short time schedules until further notice. Until the past two weeks the New Bedford fine goods mills were making exceptional headway in securing business. They are now finding that buyers will not duplicate in any large way on their initial orders for fine shirtings and dress cottons and their managers have concluded to start more extensive short time schedules at once.

The New Bedford authorities state that about 35 per cent of the looms are idle and they say further that more looms could be placed in operation if weavers were willing to work at the prevailing rates. The Fall River situation has gone from bad to worse during the month. The Fall River Iron Works Mills are closed for an indefinite period. The stock on hand at Fall River has not increased during the month yet the sales in any one week did not run much over 110,000 pieces. The stock has been kept down by the most drastic curtailment known at Fall River since the mills were closed by the long strike of 1904.. Reports of quarterly earnings are growing more unsatisfactory and as the fiscal year for many Massachusetts corporations closes on September 30, a dreary showing is anticipated by the stockholders.

Market conditions have not improved during the month. At times there have been spurts, but in nearly every instance they were precipitated by forced selling to keep stocks down or to eliminate all stocks as cotton declined. At this writing the merchants and manufacturers in the trade are much unsettled by general business developments and the anticipated recovery following an adjournment of Congress has not put in an appearance. Railway complications, liquidation on the stock exchange, hesitation in the placing of steel orders are but a few of the adverse factors.

The print cloth market has shown more weakness than other divisions and prices went down to 4½ cents for 38½-inch 64x64s and and 5 cents for 68x72s. Very few New England mills met this level of values until the last week of the month and then only in a small way. The market on fine grey combed yarn cloths also fell off nearly ½ cent a yard and sales of 30-inch 88x80s, 11.35 yard goods were reported from first hands as low as 5¼ cents. This condition in plain fine cloths in the grey was reflected in finished cloth in the New York market where buyers

secured lawns, linens, and batistes at the most favorable figures reported in some years.

The demand for drills and sheetings was fitful and the export markets offered nothing in the way of new business that was acceptable. Tickings of standard weights and constructions sold better than plain or fancy denims. Fancy duck, coverts and checks were sought after in small lots, but the production on these grades has been restricted almost to orders for months past. Towellings plain and fancy, have sold only in a limited way and prices have been unprofitable.

Staple prints remained unchanged in price during the month. The movement on them has been generally light and confined largely to filling in orders from the jobbing trade. Export shipments have been steady and it is estimated that fully a sixth of the years output on staples has been sent abroad. It is now expected that Pacific percales will be priced soon after Labor Day.

Amory, Browne & Co., have abandoned the policy of restricted prices on *Toile du nord* dress Ginghams and will offer them for the new season free from all restrictions. It is anticipated that prices to be made on various dress ginghams by the Eastern corporations for the spring of 1912, will be the closest named in years, the belief of agents being that competition for a limited business will be very sharp and possibly unprofitable. The gingham situation as a whole is less promising than it has been for several years due largely to the increased loomage in both East and South.

Trading in bleached cottons has been best on the leading brands but it has been forced and not free. On 4-4 64s bleached, prices have gone as low as 5½ cents. The demand for the lighter counts has been better since prices dropped off. On fine combed yarn bleached cloths the buying has been quite as high as any reported on the carded numbers.

The Monument and Stevens quilt mills are running full on orders that will carry well to the end of the year. Some of the smaller mills have been getting more business on this class of merchandise recently owing to unsatisfactory deliveries by the larger mills. The lace and embroidery mills are getting more business but it is less profitable in consequence of the close market competition that exists.

Some of the finishing and bleaching companies have a fine business in hand on goods to be delivered for spring, but new business is accumulating slowly and specifications come forward in a very irregular way. Converters have been rushing some parts of their cloth holdings into work in order to get them on the market before a further revision in prices is made. They are proceeding on the theory that they can replace their present holdings of grey cloths at lower figures later on.

The current demand for canton flannels, domets, flannellettes, and other napped cottons has been fair. Shipments on old orders are being made freely and some of the large jobbers have been requesting anticipations of goods due. Sellers are able to get about as good prices as those named when the season opened early in the year and with the lower cotton prices of the past month some corporation managers are expecting a lighter loss than they planned to take. Fancy cotton blankets and heavy fancy napped cottons in general are well under order.

As a new cotton year is about to open, New England manufacturers are quite as much mystified about the future of business as they have been at any time this year.

The extensive curtailment of production which has been going on for months, together with the liquidation of accumulated stocks, should have brought about a substantial market response before this time. But the handicap of sustained high cotton prices in the face of a lightening general demand has proved insuperable and few managers are willing to make predictions as to the final outcome of the long strain.

A month ago it seemed to most New England manufacturers that a liquidation of labor costs would be unnecessary. The movement of financiers in the railway world looking toward an eventual wage revision has seemed to change this view and it is by no means certain that a general lowering of costs will not be forced. The difficulty lies in the fact that New England living costs are still very high and are moving upward rather than otherwise.

The large machine shops are still running on short time. Some specialty business is being picked up, but new building operations are going along slowly and progress is very moderate in the installation of new machinery ordered some months ago.

Concerning the cotton crop, manufacturers are less hopeful of extremely low prices. There is no present inducement for spinners to buy because of the contracted demand for cloth. At the same time new prices are being prepared on cloths for spring and they are likely to be based on cotton as it is now quoted on the exchanges. The possibility that a low price may cause active demands from large mills in October is much discussed.

It is manifest that mill stocks of cotton are very low and any special impetus in the way of free October buying is likely to sustain the prices of cotton on a much higher level than mill men would like to see.

A syndicate has been formed by Edgar A. Wallis, C. Sterling, and J. E. Aikman, in Caracas, which proposes to incorporate into a British corporate company to take over and operate the cotton goods factory at Caracas heretofore operated by F. de Sales Perez & Co. The new company is to have a capital of 4,040,000 bolivars ($779,770), and will greatly extend the plant and increase its output, manufacturing many lines of jute, cotton, linen, and silk goods, and will also do what it can to foster the cultivation of these raw products in Venezuela.

That this will affect largely the already limited cotton trade with the United States may be seen when it is understood that the bulk of its output is to be gray sheeting, cotton linens, unbleached muslins, shirtings, cotton pants goods, ducks, and drills, these being the principal lines sold to Venezula by American cotton factories.

It is also likely that the machinery for the extension of the plant will come from England, primarily because the leading spirit in the new organization, Mr. Wallis, is English, because he represents large British engineering and mmanufacturing concerns, and because there is no American representative of such concerns in Venezuela ready to demonstrate superiority of American machines over others.

It is reported from Ottawa that a parcel-post system is likely to be established in Canada in the near future, according to a statement made in the House of Commons on July 21 by the postmaster general. The superintendent of city post offices is studying the question with a view to the possible adoption of the system now in vogue in England.

MONTHLY REVIEW OF THE COTTON MARKET.

BY H. & B. BEER, NEW ORLEANS.

As was to be expected, the usual August deterioration in the cotton crop has taken place. During the past month there has been a continuance of hot, dry weather, except alternating scattered showers, in Texas and Oklahoma, and as a result, crop accounts from the Southwest are not quite so favorable as they were one month ago. Nevertheless, good crops are expected of Texas and Oklahoma, as the previse is made that if good rains are had during the last days of August or in early September, chances will be good for the making of a large "top" crop.

As regards the crop outlook in all states east of the Mississippi River, the same brilliant prospects exist for the producing of a record crop in all states except Louisiana and Mississippi. Present indications point to a yield of about 10,500,000 bales outside of Texas. Therefore, it will not require a very large crop in Texas to bring the total production of the South to 14,000,000 bales, possibly more with good rains in Texas in the near future.

The movement of new crop cotton in Texas is of record breaking proportions, the State having marketed a little over 100,000 bales already, against last year's record of 126,000 marketed prior to September 1st., and it looks as though Texas will have 200,000 bales marketed before the end of August, which would beat all previous records by about 75,000 bales. The crop is also moving early in the Mississippi valley and South Atlantic states. Therefore, a very heavy movement of cotton is looked for in September and to continue throughout the balance of the season. In support of large crop ideas, attention is being called to the low price at which cotton seed is selling in the Southwest compared with the same time last year, about $10 per ten cheaper, or $10 to $15 against $20 to $25.

As yet there has been no urgent demand for new crop arrivals, and as a result, stocks have been accumulating in the interior. It is expected that there will be ginned upwards of 500,000 bales in the South by September 1st., compared with 353,000 last year and 388,000 year before last. The prevailing labor troubles in Great Britain, particularly in England, have not improved the trade outlook abroad, business having been paralyzed of late and trade is still in a demoralized condition notwithstanding every effort being made to adjust differences between capital and labor as quickly as possible. Nor has the poor feed crop prospects in India bettered the British trade situation, on the contrary, a falling off in orders is looked for from that source.

In the United States no progress appears to be in evidence looking to the restoration of improved trade conditions. The shortage in the corn crop in the West and Southwest, and the none too good a wheat crop has affected trade prospects, reflection of which is already denoted in the shrinkage of values on the New York stock exchange. Under the circumstances present levels of spot cotton and cotton for future delivery appear to be relatively high considering the prospects now existing for a crop of 14,000,000 bales, as never before has 11 cents been paid for fall deliveries on the eve of marketing a bumper crop.

Another feature to reckon with is the fact that the year 1912 will be the Presidential campaign in the United States, and as tariff revision will probably be the battle cry still and perhaps government supervision of corporations, no great undertakings are likely to be attempted the coming season. In the meantime there is the possibility of the market working higher temporarily on speculative buying in the event of the September, 1st., cotton crop report being less bearish than expected. But if the condition of the crop is better than 80, it will still indicate a large crop, as crops of 13,500,000 to 13,825,000 bales were made in the years 1908, 1906 and 1904 when the September Bureau reported the condition at 76.1, 77.3 and 84.1 respectively, in which years the acreage was ever so much smaller than it is today, in 1904 it being only 31,730,000 acres, against 35,004,000 this year.

THE YARN MARKET.

The yarn market for the past month has reflected the general depression in all lines of the textile industry caused by the unsettled conditions growing principally out of the tariff revision fiiasco at Washington and the instability of the price of raw cotton. Now that the special session of the 62nd Congress is a thing of the past and the subject of tariff revision settled for at least three months, it is probable that business will begin to show some decided improvement. The price of cotton and the probability of a bumper crop, will still be a factor in the situation, but the opening of the new cotton season is so close at hand that it is improbable that these features will have any decided effect on the market for any lengthy period.

The month opened with the same irregular market that had characterized the close of the previous month, with buyers holding out for lower prices and spinners marking time and waiting until the buyers absolutely had to have yarns and meet their prices. Some reports indicated that a few spinners were accepting forward contracts on yarns on a basis of less than 10 cent cotton, but this rumor could not be confirmed and its truth is very much doubted by all those in touch with spot market conditions.

Throughout the middle of the month the cotton market fluctations continued to be very great on futures, owing to reports sent out from certain New York sources with the intention of influencing prices and other reports circulated by other interests in various sections of the South in an endeavor to counteract the effects of the New York reports. The effect of these conflicting rumors was to keep the prices moving up and down in such a manner as to keep both buyers and spinners on the anxious seat and no one was really willing to take a chance on what the future might bring forth. About the only actual buying was small hand to mouth orders which had to be filled. The extended curtailment of numerous mills both North and South, tended to a certain extent to stiffen the spinners situation. Underwear manufacturers reported fair orders on spring goods but most of them were of the opinion that the buying movement would not be well underway before sometime in September, because of the instability of the cotton market.

The close of the month witnessed a few small sales of weaving yarns for fall delivery and some sales of five and ten thousand pounds lots that still indicated the hand to mouth methods that have been in evidence for a long time past. Buyers are still holding off under the belief that prices will be on lower levels later on, while the spinners, particularly those representing the large mills, are keeping

out of the market owing to the unsettled conditions and very low prices which the buyers are offering for fall shipment. Most of the spinners are simply keeping in touch with the situation and show no great desire to place contracts. Weavers are more interested in the piece goods situation than they are in covering their future requirements on yarns, and the demand in the cotton goods market has been so limited, that many mills have closed down until after Labor Day. This places them in a position where they do not need yarns to meet any pressing requirements. Knitters continue to nibble at the market here and there, but give no orders of any considerable size.

The following are the New York quotations for the end of the month:

SOUTHERN SINGLE SKEINS.

4s to 8s	18 @19	20s	21½@
10s to 12s	19 @19½	24s	22 @
14s	20 @	26s	22½@
16s	21 @	30s	23 @

SOUTHERN TWO-PLY SKEINS.

4s to 8s	18½@19	36s	27 @
12s to 14s	19 @20	40s	28 @29
14s	20½@	50s	33½@34
16s	21 @	60s	42 @
20s	21 @21½	3-ply 8s upholstery	21 @
24s	22 @	4-ply 8s upholstery	21 @
26s	22½@		
30s	23 @		

SOUTHERN SINGLE CHAIN WARPS.

10s to 12s	19 @	24s	22 @
14s	20 @	26s	22½@
16s	20 @20½	30s	23 @
20s	21 @	40s	29 @
22s	21½@		

SOUTHERN TWO-PLY CHAIN WARPS.

8s to 10s	19 @20	26s	23 @
12s to 14s	20 @21	30s	23 @23½
16s	21 @	40s	29 @
20s	21 @21½	50s	34 @

SOUTHERN PEELER FRAME CONES.

8s	19½	18s	20¼@
10s	19¾	20s	22 @
11s	20	22s	22 @
12s	20½	24s	23¼@
14s	21	26s	23½@
16s	21	30s	24¼@

THE KNIT GOODS MARKET.

The knit goods market for the past month, while as a rule very slow, had quite a number of bright spots and some knitters report an excellent amount of business booked for sometime in the future. Some of the hosiery mills handling mercerized lisle and cotton reported excellent business conditions, despite the fact that the call for silk hose still predominated through practically the entire market. Embroidered goods and lace effects in hosiery are receiving scarcely any attention now, and it is predicted by some reliable authorities that this fad for silk hosiery will be largely superceded another year by the mercerized lisle goods, because of their superior wearing qualities. There has been some conservative buying of spring lines of men's wear, and a few small reorders have been received, but the effect of the tariff tinkering in Congress has been very marked in all lines of knit goods as well as other textile lines.

The month has been a suprise to many selling agents, however, for while no orders of any great size have been received, the numerous small orders that have been dribbling into the market, day after day, have increased the total on the books to a very creditable amount and many of the manufacturers are feeling happier than they were a few months ago. Fancies are reported to be moving slowly and houses that prepared heavily in this line of goods are said to be exerting considerable pressure to sell them. The brightest spot in immediate sales was in the cheaper grades of silk hose. The retailers have taken very sparingly of the fancy grades of hose this season and very little lace lisle or silk is seen on actual wearers.

The underwear market has been very irregular during the entire month and while underwear manufacturers are getting some business, it is not sufficient to keep their plants operating to full capacity. It was reported that a few manufacturers operated their plants in anticipation of orders and have a stock of finished goods more than sufficient to fill orders booked, however, it is probable that the number of mills doing this were comparatively small. A greater number of manufacturers, under present conditions, deem it folly to pile up finished goods in anticipation of orders in the face of a declining cotton market. The weakest point in the underwear market has been the cheap nainsooks. The balbriggan manufacturers who entered into an informal agreement during the last month to curtail production until September 15th are reported to have shut their plants down tight. This produced a reasonably good effect upon the buyers, who are said to have overcome their persistence in urging revision of prices on orders placed and are willing to transact some little business. On the whole the balbriggan market is much firmer now than it was sometime ago.

It is reported that when the hosiery salesmen start on the road in September they will be showing a line of pure thread silk half hose which has not yet been exhibited to the general trade. One manufacturer has produced a Tussah half hose with a cotton back which he expects to offer to the retail trade at $2.05. This half hose is said to have an advantage over the pure Tussah sock, because it adds the quality of durability to its silk effect. Trade in hosiery as well as underwear is very quiet now. There are number of Southern buyers in the market, but they are operating very slowly. The opening of the new cotton crop and the steadying of the price of the raw material which will probably result will go a long way toward assisting the knit goods market and placing the manufacturers where they will be willing to make definite prices on a basis agreeable to the buyers.

Receipts of piece goods into Shanghai and Tientsin show marked increase of late. The source of this information is the Shanghai office of the International Banking Corporation, the statement being as follows:

American piece goods have recently been ordered for Shanghai to the value of £100,000 ($486,650), which brings the total since last December to £250,000 ($1,216,625). Shipments were made from Manchester during January and February to Shanghai and Tientsin to the value of £2,200,000 ($10,706,300), against £1,400,000 ($6,813,100) for the same period last year. In March the average of shipments from Manchester was more than maintained and more than double the March 1910 figures, and we can only hope the consuming capacity of our market has not been overestimated. The offtake during the three months has increased by 12½ per cent and sales by public auction (which are 37 per cent of the total offtake) are higher by 42 per cent than in the first quarter of 1910.

COTTON MANUFACTURING.

FILLING PILE WEAVING AND DESIGNING.

(Contributed exclusively to COTTON.)

BY PROF. WM. WATSON.

PART III.

CORDED VELVETEENS.

In these structures the pile picks are bound in, at intervals, in a straight line. The cutting knife is run right up the center of the space between the pile binding points, with the result that the tufts of fibers project from the foundation in the form of cords or ribs running lengthwise of the piece. An illustration of a cloth is given in Fig. 9 which shows in the left and right portions respectively, the appearance of a corduroy before and after the operation of cutting.

The finer classes of cords, such as are used for children's clothing and dress fabrics, are largely made in fine yarns with a plain back. The corduroys, used for men's clothing, are made stronger and heavier, and a twill foundation weave is mostly employed. In the heavier cloths thicker filling is used, and consequently fewer pile picks to each ground pick are necessary, usually not more than two being employed.

In the simplest cord design, the pile picks are bound in in plain order on two consecutive ends. J, K, L and M. in Fig. 10 are examples with a plain back which, in the same set, yield successively an increased width of cord. Thus, with 72 ends per inch in the finished cloth the number of cords per inch will be J-12; K-9; L-7; and M-6. Designs may be constructed to produce other widths of cords simply by varying the space between the binding ends.

The plain binding weave of the pile picks may be reversed in alternate cords, as shown at J, in which case the design extends over the width of two cords, and each pile pick forms alternately a long and a short float. On the other hand, the pile binding may be the same in each cord, as shown at K, and in this case all the pile floats are equal. The result is practically the same whichever method of binding is adopted, because the floats are cut as nearly as possible in the middle of the space between the pile binding points; consequently, in either case, one side of each tuft is longer than the other side. The difference in the lengths causes the ribs to have a rounded formation, as the long sides of the tufts forms the center, and the short side the outer parts of the cords. This is illustrated by the drawing given at N in Fig. 10 which shows on the left how the picks of the plan K interlace, while on the right the appearance of the cord, after the cutting is represented. The arrows indicate the position of the cutting races. Similar effects are produced by the designs L and M, but here there are three and four pile picks respectively to each ground pick.

Examples of cords with a one-and-two twill back are given at O and P in Fig. 7, and with a two-and-two twill back at Q, R and S. These are arranged two pile picks to each ground pick, and in producing very heavy structures they are woven with comparatively few ends per inch, the number varying from about 28 to 36.

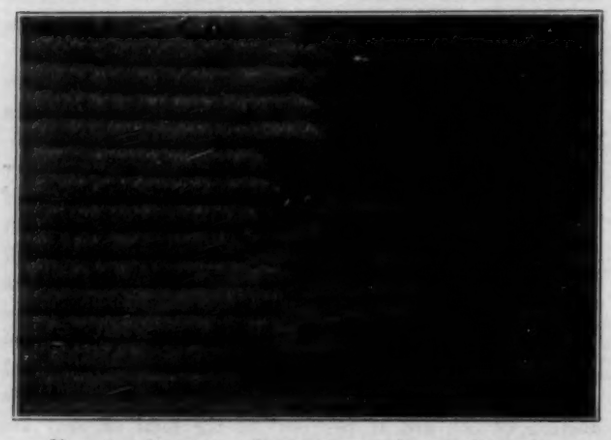


FIG. 9. CORDUROY BEFORE AND AFTER CUTTING.

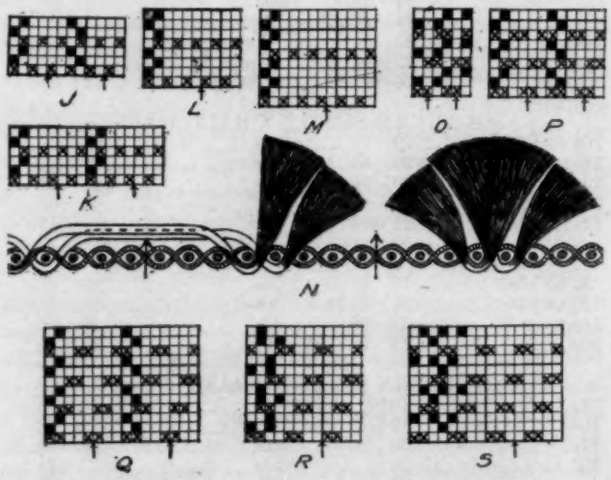


FIG. 10. EXAMPLES OF SIMPLE CORD DESIGNS.

The widths of the cord, produced by the design N, is only three ends wide, and both sides of the tufts are of equal length; therefore the ribs are not rounded, and a poor and bare structure results. P is similar to J except for the difference in the ground weave, the pile floats being of different sizes, and the complete design extending over the width of two cords. Q is similarly arranged, but in R and S, (which are used for specially heavy and wide cords), alternate pile picks are interwoven more frequently with the object of producing greater variety in the length of the tufts, and so cause the rounded formation of the ribs to be more pronounced.

The cutting of cord designs, by hand, is much more readily accomplished than in the case of plain velveteens, as only one traverse of the knife is required for each cord. In the lower classes of cords the cutting operation is now largely facilitated by the aid of machinery, of which there are two chief types. In one method, which is the simpler, the two ends of a piece are sewn together and the cloth is passed rapidly under tension through a machine during which a cord is cut the full length except for a few inches at either end. The knife is similar to the kind used in hand

cutting, and at each complete passage of the cloth the machine is stopped, while the guide is inserted in the next cord. The cloth makes as many passages through the machine as there are cords to be cut.

In the second type of machine all the cords are cut at the same time by means of circular knives, one to each cord, placed upon a revolving shaft. Each knife rotates within a slot formed in a guide, the pointed end of which is inserted under the pile floats in the centre of a cord. By means of tension rollers the cloth is drawn forward horizontally towards the knives, but at about the point of contact with the latter, it is taken downward over the edge of a transverse bar. The floating pile picks are brought by the

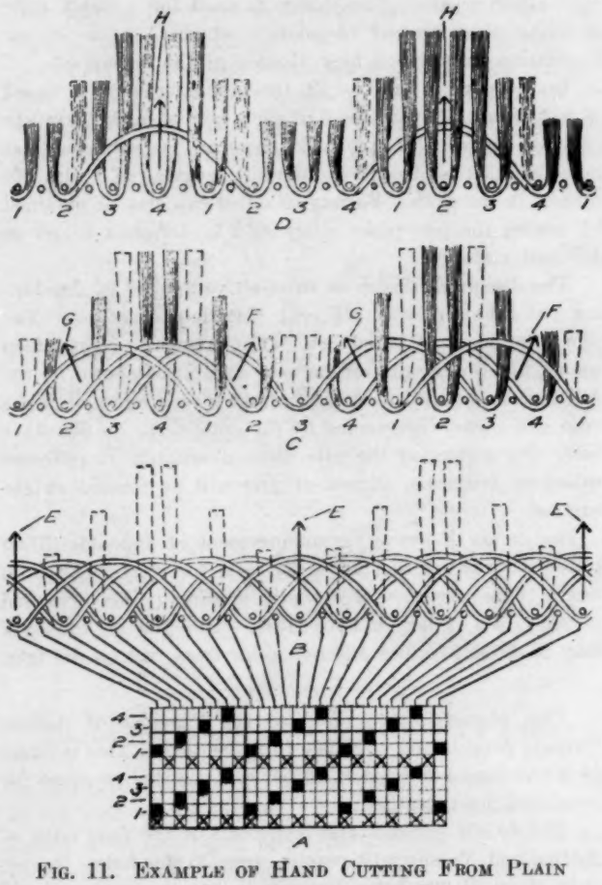


FIG. 11. EXAMPLE OF HAND CUTTING FROM PLAIN VELVETEENS.

guide into the path of the revolving knives and are cut, while the cloth passes downward and is either wound on a beam or is plaited down.

In addition to the corded velveteens in which the rib formation is due to the pile picks being bound in in a straight line, as shown in Fig. 10, cord effects are now largely produced by hand-cutting from plain velveteen weaves. In the latter system tufts are formed of different lengths, so as to form rounded cords, simply by the way in which the pile is cut. The width of the cords is not determined by the repeat of the pile weave, and in the same weave different widths of cords may be formed. It is customary, in this system for the cutting to be performed at two operations: first on a short frame; and then on a long frame.—Different forms of knives are used, the blade being supported vertically in cutting certain races, and at an angle in cutting other races. A simple example, to illustrate the principle, is given in Fig. 11 in which A shows an ordinary plain back velveteen weave repeating on eight ends. Corresponding sections through the warp are given at B, C and D, which represent in stages how the pile picks are cut. The interlacing of the four picks that constitute a repeat of the pile weave, is indicated at B, the warp threads in which are shown connected by lines with the corresponding vertical spaces of the plan A. The arrows lettered E indicate the position of the first series of cuts which, in the example, occur at intervals of twelve ends. These cuts are made on the short frame system throughout the length of the piece, with the blade supported vertically and care is taken in starting that the races are the proper distance apart to give the required width of cord. All the floating pile picks, which are in line with the stroke of the knife, (three out of every four), are severed, and the free ends then assume the position represented by the dotted lines in B, three different lengths of pile being formed.

After this portion of the cutting has been effected, the cloth is taken to a long frame, and a second series of cuts are made with the blade supported at an angle, as indicated by the arrows F in the drawing C. Then a third series of cuts are made with the blade inclined in the opposite direction, as shown by the arrow G. In each race one thread in every repeat of the pile weave is severed and the free ends assume the positions shown by the dotted lines in C. The final series of cuts are made in the position shown by the arrow H in the drawing D, and the blade in this case is held vertically.

The numbers below C and D indicate the order in which the pile picks are inserted, and by comparing the drawings, noting the order in which the cuts are made, the gradual evolution of a corded pile effect from a plain velveteen weave will be understood. This system of cutting is more costly than the cutting of proper corduroy, but for ladies' and children's wear it has the advantage that the cloth is softer and more flexible. The two types of cord may be readily distinguished by the handle.

Design.	Counts of Warp Cotton.	Counts of Weft Cotton	Ends per inch in reed.	Ends per inch in cloth.	Ground picks per inch.	Pile picks per inch.	Total picks per inch.	Lgth. of Warp 100 yds. Cloth.	Width in reed per 24 in. grey.	Calculation weight of 100 yds. 24 inches wide.	Tufts per square inch
B Fig. 3	2-60s	40s	72	81	75	225	300	104	27"	32 lbs.	3200
C and D Fig. 3	2-70s	60s	72	83	88	352	440	103	27⅔"	31 lbs.	3700
E Fig. 3	2-80s	70s	76	88	90	450	540	103	28	32 lbs.	4800
A Fig. 7	2-20s	16s	38	44	80	160	240	102½	28	63 lbs.	4500
B Fig. 7	2-80s	70s	72	84	108	324	432	102½	28	26.7lbs	4600
C Fig. 7	2-70s	60s	72	84	104	416	520	102½	28	35.8lbs	5900
L Fig. 10	2-60s	50s	72	87	92	276	368	104	29	34 lbs.	2350
O Fig. 10	2-16s	22s	28	34	90	180	270	102½	29	54.7lbs	1040
P Fig. 10	2-20s	18s	30	37	140	280	420	102½	29½	82.7lbs	1760
Q Fig. 10	2-18s	18s	32	39	170	340	510	102½	29½	112 lbs	1680
R Fig. 10	2-16s	18s	32	40	144	288	432	102½	30	100 lbs	980

PARTICULARS OF FILLING PILE FABRICS.

The weaving particulars, of a number of the foregoing examples, are given in the accompanying table, and in order that comparisons may be made the width in the reed for 24-inches grey, the calculated grey weight of 100 yards of cloth 24-inches wide, and the approximate number of tufts to the square inch in the finished cloth are stated. The particulars of A Fig. 7 are suitable for a moleskin fabric.

A feature to be noted is the great shrinkage in width from the reed to the cloth which varies from about 12½ per cent. in the lighter velveteens, to 20 per cent. in the heavy cords. There is very great tension put on the warp, (a positive shedding motion is mostly used), and the shrinkage in length is very slight. For this reason all the warp is usually brought from one warp beam, although some of the ends are much more frequently intersected with the filling than others. In any design the weight of the cloth can be varied extremely by varying the ends per inch and the thickness of the weft. Reducing the set of the warp enables more weft to be put in, and the excessive weight of the heavy cords is obtained by reason of a loose foundation weave being employed with few ends per inch. A very good quality of cotton is required for the warp because of the great strain upon it, and in the best cloths the finest

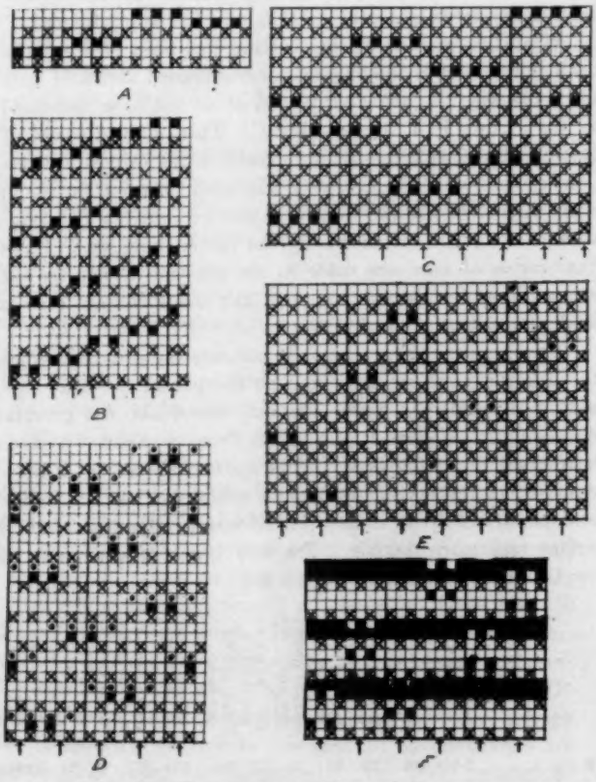


FIG. 12. EXAMPLES OF FILLING PLUSHES.

fibered cottons are used for the filling. The finer the fibers are, the more are required in forming a given size of thread, and the more are contained in each pile tuft.

FILLING PLUSHES.

The designs for these fabrics are constructed on exactly the same principle as plain velveteen, but the pile floats are longer and more firmly bound in while the cloths are frequently very heavy. In the plan A in Fig. 12, the pile interlacing is based on a four-sateen weave and there are two pile picks to each ground pick. This design is used for filling pile Astrakhan structures in which thick Mohair filling is used for the pile, and cotton warp and woolen filling for the foundation. The Mohair filling, previous to weaving, is boiled while wound round a spindle or twitched tightly in the hank. This treatment causes the Mohair when slack to cut up, hence after the pile cutting operation, the free ends of the tufts form curls on the surface and give the cloth the characteristic Astrakhan appearance.

In the plain back velveteen structures previously shown, all the pile picks go into the same shed as one ground pick, and into the opposite shed to the other ground pick. This causes a slight irregularity in the lower picked cloths, which however, is quite imperceptible in the finer fabrics when finished. In some of the long and coarse filling pile structures, the irregularity is got over in the manner illustrated at B in Fig. 12 where the plain ground texture is shown modified in such a manner that each group of two pile picks is in the same shed as the previous ground pick, and in the opposite shed to the succeeding ground picks.

The design C in Fig. 12 is arranged two ground to one pile pick, and the pile interlacing is based on an irregular eight-sateen weave. This design is used for a heavy type of filling plush termed "dogskin," which has a cotton foundation on which a long Mohair pile is developed.

In the plan D in Fig. 12, the pile interlacing is based on a five-sateen weave, and to each ground pick there are two pile picks. One pile pick, however, has a longer float than the other, so that two different lengths of pile are formed in the cloth. Variety of effect can also be obtained by having the pile picks alternately in defferent colors or different materials.

The design E illustrates an effective method of developing the filling pile in different materials or colors. The pile interlacing is based on an irregular eight-sateen weave, but the binding of the odd pile picks, shown by the full squares, occurs on one-half of the plan, while that of the even pile picks, represented by the dots, occur on the other half. By arranging the pile picks alternately in different colors or materials, stripes of pile will be formed on the surface.

The design F shows the arrangement of a double filling plush, a structure that is chiefly used for rugs. The cloth has a plain center with the pile binding points arranged in six-sateen order on both sides. The pile on the back may be developed in a different color from that on the face.

This season's cotton crop of the Province of Adana, Turkey, is estimated at 85,000 to 90,000 bales. This is based on an increased acreage of 20 per cent and the prospect for continued good weather.

The 40,000 spindles and 595 looms of the four mills of Adana and Tarsus will require over 35,000 bales, leaving only about 50,000 bales for export. Italy, Germany, and Spain are the principal purchasers of local cotton. The two new cottonseed-oil mills in Mersine are now being operated and will require a large part of the 7,000-ton crop of local cotton seed. American cotton seed has been planted to a considerable extent this year and about 7,000 bales of long-fiber cotton are expected. The native cotton is short fiber and must be picked with the boll and later separated therefrom; hitherto, thus separation has been done by hand, but this year decorticating machines have been imported and will doubtless gradually replace the hand-labor process. The ginning of the local cotton is done with English leather-roller gins. It is claimed that the American saw gins cut the fiber of the local cotton and until this is disproved it will be impossible to introduce American ginning machinery.

Bermuda's invoiced shipments to the United States in the first half of 1911 included 177,232 boxes of onions valued at $169,878; 29,4789 barrels of potatoes worth $114,-007; $63,387 of other vegetables, and $2,120 of cut flowers.

COTTON MILL MACHINERY CALCULATIONS.

(*Contributed Exclusively to* COTTON.)

BY B. M. PARKER.

PART VII.

THE RIBBON LAPPER.

The object of the ribbon lapper is to further prepare the laps for the comber so that they will be of a more uniform structure than is possible with the sliver lapper, thus placing the fibers in a better condition for the combing by the needles of the comber. It is usually made to double six laps, though sometimes only four laps are used. The average draft is six, though we must consider the weight of finished laps desired. Each lap is drawn under separate drawing rollers and placed one above the other on the sliver plate, where they are condensed and calendered

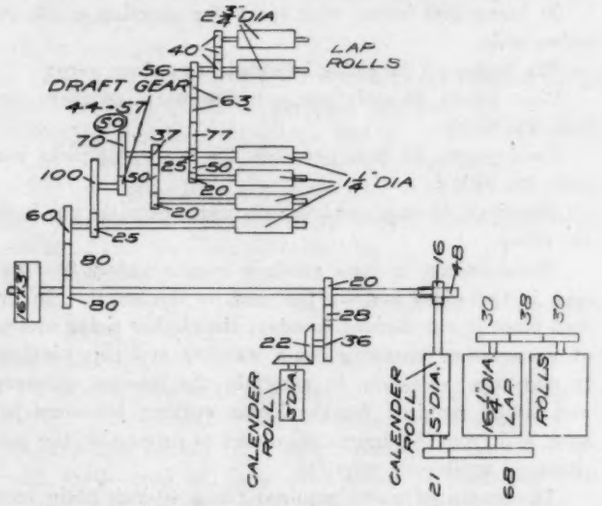


FIG. 22. GEARING PLAN OF WHITIN RIBBON LAPPER.

by the calender rolls and wound up in the form of a lap at the end of the machine. The laps are made 8 to 12 inches wide, depending upon the width of lap the comber can handle. Stop motions are provided to stop the machine when a lap runs out, thus preventing singles, and also when the laps are full, thus insuring the laps to be of uniform length. Leather or metallic rolls may be used for drawing, though the common preference seems to be for leather rolls on both the sliver and ribbon lappers. Fig. 22 shows a diagram of the gearing of the Whitin ribbon lapper. The arrangement of the draft rolls and gearing is very similar to that in use on the drawing frame. The draft gear, as shown, is located on the stud with the 100-tooth gear, called the crown gear, which is driven from the front roll. The diagram shows only one set of drawing rolls, the others being simply a continuation of those shown.

Starting with the 16¼-inch lap roll and figuring back to the 2¾-inch wooden lap rolls, we get the following as the draft constant:

$$\frac{16.25 \times 21 \times 16 \times 60 \times 100 \times 70 \times 56}{68 \times 48 \times 80 \times 25 \times X \times 25 \times 2.75} =$$

286 draft constant.

Factor ÷ gear = draft, then 286 ÷ 50 = 5.72 draft with a 50-tooth draft gear on the machine.

The drafts occurring between the different drawing rolls are the ones that do the real reduction of the bulk of the material, the others being, in each case, just enough to keep the material tight. Fig. 23 shows a diagram of the gearing of the Mason ribbon lapper. This machine is built on the same principle as the one shown in Fig. 22. The draft factor, figuring between the 12-inch lap rolls

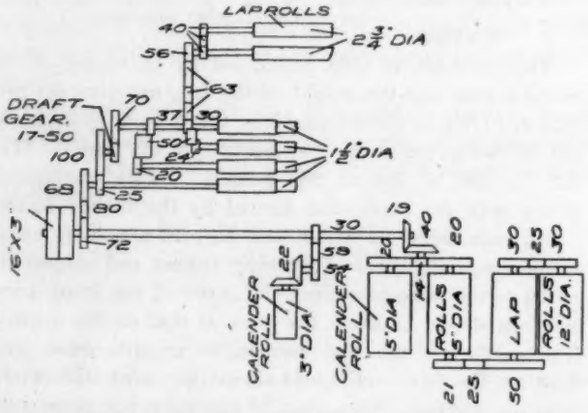


FIG. 23. GEARING PLAN OF MASON RIBBON LAPPER.

and the 2¾-inch wooden lap rolls on back, is obtained as follows:

$$\frac{12 \times 21 \times 14 \times 19 \times 68 \times 100 \times 70 \times 56}{50 \times 20 \times 40 \times 72 \times 25 \times X \times 30 \times 2.75} =$$

300.78 or practically 301 draft factor.

Factor ÷ gear = draft. Factor ÷ draft = gear. Then a 50-tooth draft gear would give a draft of 6.02, as follows: 301 ÷ 50 = 6.02 draft.

PRODUCTION.

On these two machines the production varies greatly, depending upon the speed at which the machine is run and the weight of the lap. The same remarks made in reference to the sliver lap machines can apply here, as regards speeds, etc., and, as the same size calender rolls are used on all, the same figures for getting production will apply.

Both the Whitin and Mason ribbon lappers are constructed to give three revolutions to the driving pulleys to one revolution of the 5-inch calender rolls, so the speed of the driving pulleys on either must be three times the speed of the calender rolls. Both machines have 16-inch driving pulleys, so the following calculations for the size pulley needed to drive the machines will apply to both.

Example. What size pulley will be required to drive the ribbon lapper, if the calender roll speed is to be 100 revolutions per minute and line shafting speed 325 revolutions per minute?

$$\frac{3 \times 100 \times 16}{325} = 14.76 \text{ inches, size of pulley.}$$

The production formula and calender roll diameter being the same on all the machines and allowing a loss of time of 25 per cent., a production constant can be worked out that will be applicable to any one of the four machines shown. The production calculation for the sliver lapper.

previously given in this article, is identical with a production calculation for the ribbon lapper. A look at this calculation will show that there are only two quantities in which we may expect to find any variation, that is, the speed of the calender rolls, given as 100 revolutions per minute, and the weight of the lap, given as 350 grains per yard, so then, if we eliminate these two variable figures from the calculation, we get the production constant as follows:

$$\frac{5\times3.1416\times600\times.75}{36\times7000} = .028 \text{ production constant.}$$

This constant of .028 multiplied by the speed of the calender rolls and the weight of the lap, will give the production of either of the machines, based on a 10-hour day and allowing for a 25 per cent. loss of time. Then $.028 \times 100 \times 350 = 980$ pounds. This corresponds closely with the production figured by the former figures.

As both the sliver and ribbon lappers are, in principle and action, only types of drawing frames and subject the cotton to the same treatment, the speed of the front drawing rolls should be about the same as that on the drawing frame. To get the best results, as regards good, even drawing, the front roll speed should be under 375 revolutions per minute. From Fig. 20 the following speed ratio is gotten:

$$\frac{1\times50\times41}{26\times23} = 3.428$$

which shows that the front drawing roll makes 3.428 revolutions to every one revolution of the calender roll. Now, if the calender roll speed is 100 revolutions per minute, the front drawing roll will have a speed of 342.8 revolutions per minute or 3.428 times the speed of the calender roll. This ratio can be determined for any machine and enables us to find the front roll speed for any given calender roll speed.

(To be Continued.)

A FIELD FOR WOMEN.

BY G. W. P.

The Harvard Knitting Mill, Wakefield, Mass., is building an addition to the plant which will increase its capacity 33⅓ per cent. The factory is being operated at full capacity, 1,000 hands being employed. This establishment was founded but a few years ago by Miss Benoit, who has been from the beginning and is now the head of the industry. She began with ten girls in one room in a store building at Wakefield. From the beginning the products have been knitted goods for women and girls, designed by Miss Benoit. She has a genius for designing and making salable products and is eminently discerning in passing upon the merits of machinery and supplies for her mill. The products are distributed by three jobbing houses, at Boston, New York and Chicago. The Harvard Knitting Mill is the largest textile plant in the world which is carried on by a woman. The relations between employer and employees have always been ideal.

Black copper, valued at $276,638, was the principal item of invoice from Belgrade, Servia, to the United States during the three months ended June 30, 1911.

MILL ORGANIZATION.

(Contributed Exclusively to COTTON*)*

BY "WEBEREI."

The following figures relating to the method adopted in ascertaining the organization necessary for a 600 loom weave shed where it was intended to produce wide cotton sheetings, twills and plain goods from grey yarns will no doubt be of interest and value. The division of the looms was as follows:

250 looms 40 inches reed space for plain goods 36 inches wide.

250 looms 45 inches reed space for twill goods 42 inches wide.

50 looms 60 inches reed space for sheeting goods 56 inches wide.

30 looms 80 inches reed space for sheeting goods 72 inches wide.

20 looms 100 inches reed space for sheeting goods 96 inches wide.

The makes of the cloths intended to produce were:

Plain goods, 64 ends per inch, 20s warp, 64 picks per inch, 20s filling.

Twill goods, 72 ends per inch, 28s warp, 72 picks per inch, 20s filling.

Sheetings, 64 ends per inch, 18s warp, 64 picks per inch, 18s filling.

The shrinkage in these goods is approximately four per cent. in the width and six per cent. in the length. In the first place it was decided to adopt the slasher sizing system of preparation involving beam warping and cop winding. It was then necessary to ascertain the amount of warp and filling required for the looms working 56 hours per week and from the figures calculated to proportion the preparatory machinery required.

The length of warp required for a 40-inch plain loom running at 200 picks per minute, with an efficiency of 80 per cent. will be as follows:

$$\frac{200\times56\times60\times80\times106}{64\times36\times100\times100} = 248 \text{ yards approximately.}$$

The weight of warp yarn required for 250 looms per week, allowing two per cent. for waste in working, is then calculated.

$$\frac{250\times248\times64\times36\times100}{840\times20\times98} = 8{,}676 \text{ pounds of 20s yarn per week.}$$

The length of warp required for a 45-inch twill loom running at 200 picks per minute with an efficiency of 80 per cent. will be:

$$\frac{200\times56\times60\times80\times106}{72\times36\times100\times100} = 220 \text{ yards approximately.}$$

The weight of warp yarn required for 250 looms per week allowing two per cent. for waste in working as before is

$$\frac{250\times220\times72\times42\times100}{840\times28\times98} = 7{,}210 \text{ pounds of 28s yarn per week.}$$

The length of warp yarn required for a 60-inch sheeting

loom running at 140 picks per minute at the same efficiency as the above will be:

$$\frac{140 \times 56 \times 60 \times 80 \times 106}{64 \times 36 \times 100 \times 100} = 173 \text{ yards.}$$

The weight of warp yarn required for 50 looms per week, allowing two per cent. for waste is:

$$\frac{50 \times 173 \times 64 \times 56 \times 100}{840 \times 18 \times 98} = 2{,}100 \text{ pounds approximately}$$

of 18s yarn per week.

The warp length for the 80-inch looms running at 130 picks per minute with 80 per cent. efficiency will be:

$$\frac{130 \times 56 \times 60 \times 80 \times 106}{64 \times 36 \times 100 \times 100} = 160 \text{ yards approximately,}$$

and the weight of yarn per 30 looms, with the usual allowance of two per cent. for waste is

$$\frac{30 \times 160 \times 72 \times 64 \times 150}{840 \times 18 \times 98} = 1{,}500 \text{ pounds approximately}$$

of 18s yarn per week.

The warp length for the 100-inch looms running at 120 picks per minute with 80 per cent. efficiency is:

$$\frac{120 \times 56 \times 60 \times 80 \times 100}{64 \times 36 \times 150 \times 100} = 148 \text{ yards,}$$

and the weight of yarn required for these 20 looms allowing the usual two per cent. waste will be:

$$\frac{20 \times 148 \times 64 \times 96 \times 100}{840 \times 18 \times 98} = 1{,}230 \text{ pounds of 18s yarn}$$

per week.

The next step is to ascertain the quantity of filling required. The amount of waste allowed for working will be 40 yards per hank. It is also important to note that the reed width used in these calculations is four per cent. greater than the cloth width, whilst the length of cloth is six per cent. less than the figures calculated for the length of warp required per week. For the plain goods the width in reed is 37½ inches, for the twill goods 43¾ inches, and for the sheetings 58¼, 75 and 100 inches respectively. The length of cloth produced per week is as follows:

Plain looms, 248 yards, less six per cent. = 233 yards.

Twill looms, 220 yards, less six per cent. = 207 yards.

60-inch sheeting looms, 173 yards, less six per cent. = 162 yards

80-inch sheeting looms, 160 yards, less six per cent. = 150 yards.

100-inch sheeting looms, 148 yards, less six per cent. = 139 yards.

$$\text{Plain looms } \frac{250 \times 233 \times 37.5 \times 64}{800 \times 20} = 8{,}738 \text{ pounds}$$

of 20s filling.

$$\text{Twill looms } \frac{250 \times 207 \times 43.75 \times 72}{800 \times 20} = 10{,}188 \text{ pounds}$$

of 20s filling.

$$\text{Sheeting loom, 60-inch } \frac{50 \times 162 \times 58.25 \times 64}{800 \times 18} = 2{,}100$$

pounds of 18s filling.

$$\text{Sheeting loom, 80-inch } \frac{30 \times 150 \times 75 \times 64}{800 \times 18} = 1{,}500$$

pounds of 18s filling.

$$\text{Sheeting loom, 100-inch } \frac{20 \times 139 \times 100 \times 64}{800 \times 18} = 1{,}235$$

pounds of 18s filling.

The total weight of yarn required per week is therefore 18,926 pounds of 20s filling and 4,835 pounds of 48s filling, which will be bought in cop form; and 8,676 pounds of 20s warp and 7,210 pounds of 28s warp, 4,830 pounds of 18s warp.

This warp yarn will also be bought in the cop, but it is now necessary to calculate the number of winding spindles required to deal with a total of 20,716 pounds of warp yarn per week.

$$8{,}676 \times 20 = 173{,}520 \text{ hanks}$$
$$7{,}210 \times 28 = 201{,}880 \text{ hanks}$$
$$4{,}830 \times 18 = 86{,}940 \text{ hanks}$$

Total.....462,240 hanks

The average winding speed at 75 per cent. efficiency for medium yarns on a bobbin measuring 1¾ inches in diameter when empty and 5 inches when full is roughly 120 yards per bobbin at a speed of 600 revolutions per minute. On this assumption therefore the number of spindles required to wind 462,240 hanks will be:

$$\frac{462{,}240 \times 840}{120 \times 60 \times 56} = 963 \text{ spindles.}$$

963 ÷ 600 = 1.6 spindles per loom, which is good average practice. With beaming frames running at a speed of 40 revolutions per minute and taking an average diameter of 20 inches, then the speed of winding the yarn on to the drum will be

$$20 \times \frac{22}{7} \times \frac{40}{36} = 70 \text{ yards per minute,}$$

but as the average efficiency will only be about 50 per cent. the general running will approximate to 35 yards per minute. Taking 480 ends per back beam, the number of frames required to beam 462,240 hanks will be

$$\frac{462{,}240 \times 840}{480 \times 35 \times 56 \times 60} = 7 \text{ (nearly).}$$

From the methods given above it is thus possible to estimate with a fair amount of accuracy the preparatory machinery required for any size of mill, but due care must in all cases be taken to use values that will be satisfactory for the yarns to be handled.

An association organized in the United States for the promotion of trade between this country and Persia informs the Bureau of Manufacturers that there are great opportunities for the introduction of American shoes, textiles, and clothing materials into that country. American manufacturers in these lines desiring to forward their catalogues may obtain the names and addresses of representatives of this organization located throughout Persia. For further information apply to Bureau of Manufacturers, Washington, D. C,. and refer to file No. 7187.

KNITTING

KNITTING YARNS.

TESTING FOR COMPARATIVE STRETCH AND STRAIN. PLOTTING GRAPHIC CHARTS FROM THE OBTAINED RESULTS.

(*Contributed Exclusively to* COTTON)

BY WILLIAM DAVIS, M. A.

THIRD PAPER.

There can be no doubt that there exists a widespread desire for a more thorough and exact knowledge of the structure and composition of the yarns used in the knitting industry. There is probably no branch of textiles, where a knowledge of materials is so essential. The method of microscopic examination generally recommended in textbooks is to extract some fibers, examine them under a high power microscope lens and compare the observed structure of such fibers with the well known types. Thus for cotton we look for the spiral twist, for flax we expect the knotted appearance and for wool the serrated structure. This is no doubt true to exact theory, but such a method is of little practical value, for what confidence can one place on the observed structure of a few individual hairs plucked at random from the fabric? How are we to know that the examples selected are characteristic of the whole fabric?

The chemical tests for materials are open to the objection that considerable technical knowledge is necessary before the results can be relied on, and the materials and apparatus are not always at hand. By extracting typical threads and subjecting them to a general examination under a low power lens a much fuller knowledge of the nature of the fabric's composition can be arrived at. The photo micrographs of the yarns just published reveal the fact that each type of material can be readily recognized by the natural disposition of its fibers. Thus sudden bends in fiber and spiral twists are peculiar to cotton, whilst the material projects straight out from the core. Wool can be distinguished by its natural curling properties and the fibers such as mohair and camel hair can be detected by the regular curves which the fibers assume in the thread. Silk can also be recognized by its straight fibers of fine diameter and its dense form of thread. These results can be amply verified by turning the high-power lens on to doubtful examples. By passing the thread under the low power, one can notice the re-manufactured material, the defects in spinning and the presence of foreign bodies. The difference in diameter of the component fibers is also of considerable importance, frequently indicating the nature and amount of inferior material.

Further it is of great moment to the manufacturer to know more accurately the qualities and properties of his yarns. A variation in counts where none should exist gives rise to many of the unexplanable irregularities to which the knitting industry is particularly liable. The solution of these difficulties will often be found in a more accurate knowledge of the qualities and properties of the yarns.

Amongst other properties we would particularly emphasize the strength and stretch of the yarn. It should in the first instance be strong enough to stand the strain of manufacture and also possess sufficient yielding property to enable it to give without breakage under the various jerks and pulls to which it is liable during knitting. In weaving the strain and stretch are distributed evenly over each yarn extending from the cloth to the warp rail, whilst the threads are subjected to consideration friction one against another. In knitting the strain and stretch are exacted at very small distances all along the thread. The stretch is greater and more sudden in machines of the latch needle type than in the bearded needle variety. In latch needle knitting, each hook catches hold of its own bit of yarn and gives it a decided pull, thus bringing sudden strain to bear upon it. On the bearded needle frame, the thread is first measured out over the needles before the actual stitches are formed.

For these considerations, the latch needle frame can work a greater range of yarn members than the bearded needle, but the qualities of strength and stretch are more highly important. The yarn must be elastic enough to withstand the loop formation, as it must also be strong enough. Certain yarns possessing ample breaking strain are often unsuitable for knitting because the stretch is insufficient and the thread becomes liable to frequent breakage. On the other hand, a thread must be able to stand a given strain before it can be worked at all. A very general method of testing these properties is that of hank testing. A given number of threads are wound round a reel of certain circumference and afterwards stretched over two hooks on the machine. A handle is turned which causes the distance between the hooks to become gradually greater, so that strain is put on the threads. This strain is registered in pounds on a dial and the pointer stops when the threads begin to break. The weight registered is taken as the strain.

The difference between the original and final length of hank is registered on an inch scale and is taken as the stretch. The practical utility of this test lies in the fact that the manufacturer, knowing by experience the approximate pounds of strain required for the various yarn to work successfully on loom and frame, can use this machine to see that the hank is up to the minimum of strength required for practical working. When we consider that in the frame and loom each thread has individually to bear its own strain throughout its entire length, this collective testing of threads can scarcely be said to be true to the exact practical conditions. By single thread test, much more accurate information regarding the working properties of a yarn can be arrived at. By experience can be found the minimum strain required for a yarn in a given fabric, but further the evenness of the strain and the stretch can be accurately guaged.

By making a few tests, we can tell at a glance whether the yarn has been evenly spun as if frequent weak points occur, the practical working strain is materially reduced. The yarn can be tested in short lengths from 3-inches to 18-inches, ten tests, or so, taken in rapid succession and the average found. By the hank method, so much waste is incurred with a single test, that to make several tests for comparison is not desirable. Thus in many centres the single thread tester is taking the place of the hank tester.

The working of this method will be best shown by giving the results of a series of tests on various types of yarns.

The machine used is that made by Henry Baer & Co., Zurich. The thread is stretched vertically between two clamps and the strain is gradually applied by a plunger decending in a vertical oil bath. This causes the pointer to ascend the quadrant scale and register the strain when the thread breaks. The difference between the original and the final length of the thread is shown on an upright scale in inches. The length selected can be any from 3-inches to 18-inches, that of the test given herewith are for 15-inch lengths.

A series of ten tests were made on each yarn and the average stretch and strain calculated. By recording the results on a simple graph, one can tell the evenness or regularity of the thread at a glance. The diagrams show every four squares in a horizontal direction the individual tests from 1 to 10. The upper diagram shows the strain line and the lower diagram the stretch line. Each horizontal line on the strain graph represents 1 ounce, and each horizonal line on the stretch graph represents ⅛ of an inch. Following these directions it will be instructive to compare the form of the strain and stretch lines in the various tests made.

(1) 2/32s cotton yarn.

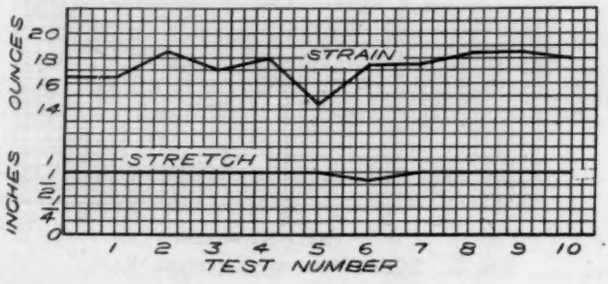


FIG. 1. 2/32s COTTON YARN.

	Strain	Stretch
1st Test	16½ ounces	7–8 inches
2nd Test	18½ ounces	7–8 inches
3rd Test	17 ounces	7–8 inches
4th Test	18 ounces	7–8 inches
5th Test	14½ ounces	13–16 inches
6th Test	17½ ounces	7–8 inches
7th Test	17½ ounces	7–8 inches
8th Test	18½ ounces	7–8 inches
9th Test	18½ ounces	7–8 inches
10th Test	18 ounces	7–8 inches

This gives an average strain of 17.45 ounces and an average stretch of practically .87-inches. The strain line shows that it varies between 14½ to 18½ ounces or a limit of 4 ounces.

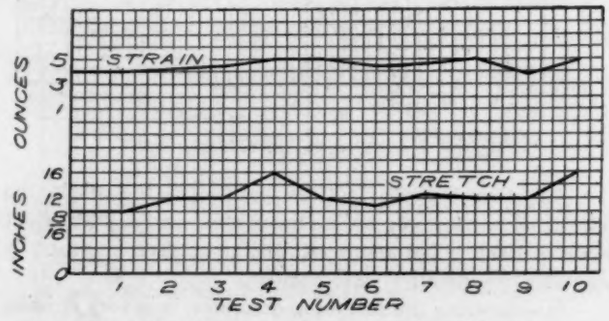


FIG. 2. 56s COUNT SINGLE COTTON YARN.

(2) 56s count single cotton yarn. From the diagram. the strain is seen to be extremely regular. The average is 4.6 ounces and variation takes place only within the limits of 1 ounce. The stretch varies between the limits of ⅜-inch, the average being .78-inch.

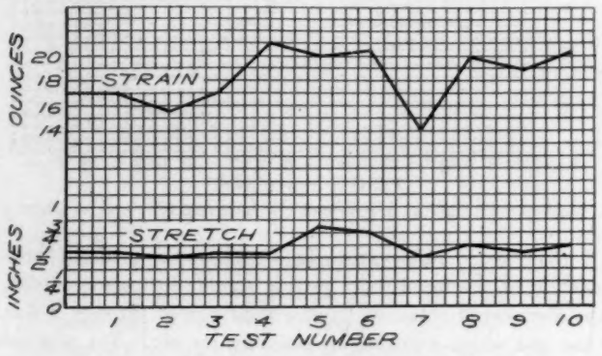


FIG. 3. 2/30s COTTON YARN, MERCERIZED.

(3) 2/30s cotton yarn (mercerised). The diagrams show that the average strain is 18.4 ounces with a stretch of .6-inch. The strain varies between 14 and 21 ounces, or between a limit of 7 ounces. One would expect that a mercerised yarn would have less stretch than an unmercerised thread because in the operation the hanks are stretched tightly into a new position, so that a portion of the stretch is lost as far as the after processes are concerned.

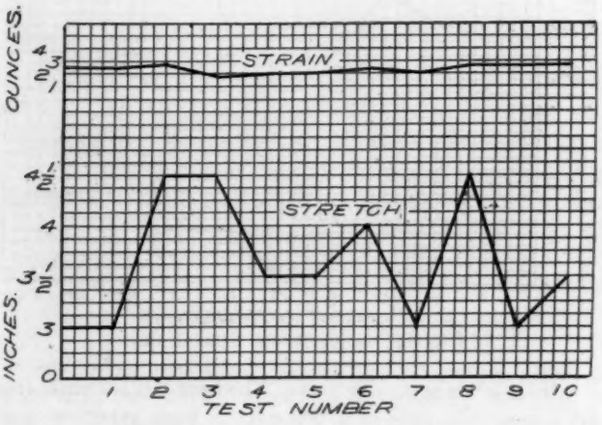


FIG. 4. ORGANZINE SILK YARN.

(4) Organzine silk yarn. (10,000 yards per ounce.) The organzine silk thread is composed of fibers run in their entire length direct from the cocoon of the silk chrysalis. This type of thread therefore differs very materially from the ordinary type of spun filament. The cotton yarn is made up of short lengths of fiber, the one twisted tightly around the other. To form a single organzine silk thread 14 or more single cocoon fibers are drawn off together. The above diagram shows a most uniform strain line, varying within the limits of only 1 ounce, a result explained by the manner in which the thread has been formed. The stretch on the other hand, shows a most remarkable deviation, much greater than any of the other types examined. At some points the stretch is as much as 4½ inches, whilst it never is less than 3 inches. Bulk for bulk, silk is as strong as cast iron and the strongest textile fiber of importance.

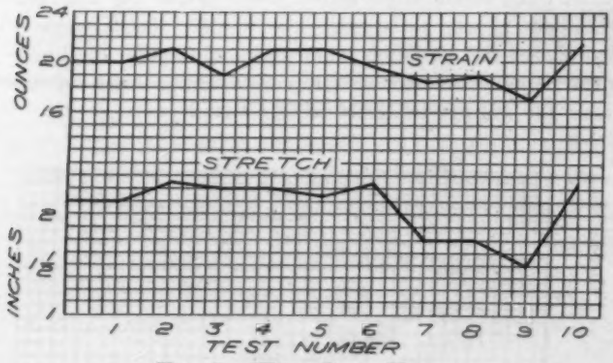


FIG. 5. WOOD PULP YARN.

(5) Wood pulp yarn. In a manner the mode of production of the wood pulp yarn is similar to organzine silk, the fiber being obtained from a fluid forced through a fine tube and which solidifies on reaching the air. The strands are thus strictly continuous and are run together in groups according to the size of the yarn. The thread thus produced is lustrous, even in diameter and dyes into brilliant colors. It is largely used in the manufacture of knitted ties of fancy pattern. The yarn under consideration is of about 2/20s worsted count. As seen from the diagram, it is very strong, bearing over 21 ounces strain and never less than 17 ounces. The stretch also is considerable, varying from 1½ inches to 2 5/16 inches.

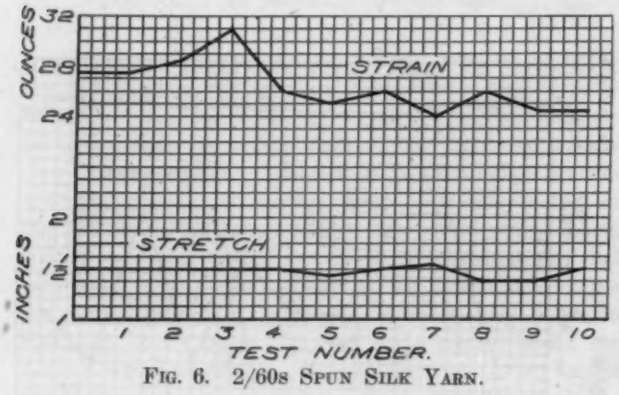


FIG. 6. 2/60s SPUN SILK YARN.

(6) 2/60s spun silk yarn. The next test shown is that of a spun silk yarn of 2/60s count. Such yarns are produced by using up the shorter silk material and spinning them together, thus producing a thread on the same principles as cotton or wool. The diagram shows the maximum strain to be 31 ounces, whilst 24 ounces is the minimum. In contrast to the organzine silk yarn the stretch is extremely uniform, an almost straight line being the result. The strain, however, is not so regular as the organzine silk.

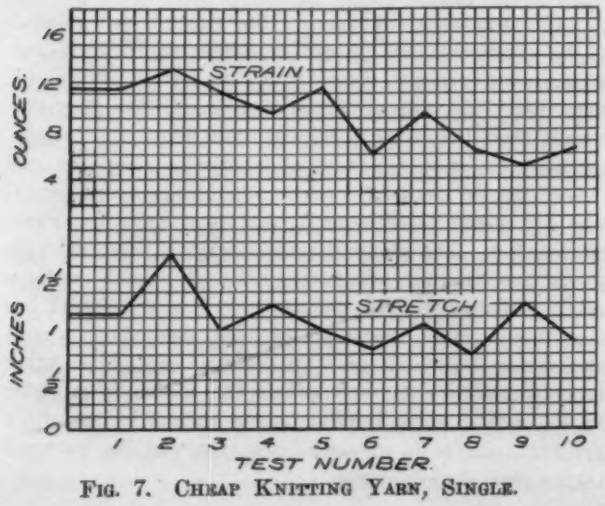


FIG. 7. CHEAP KNITTING YARN, SINGLE.

(7) Cheap knitting yarn (single). The following tests of woolen and worsted yarns show a great difference to the foregoing examples in point of regularity of strain and stretch. This sample is of a low grade woolen shoddy yarn, that is the fibers composing it have already played their part in the lifetime of a fabric. The strain varies between 5 and 13 ounces, whilst the stretch varies from ¾ inch to 1¾ inches.

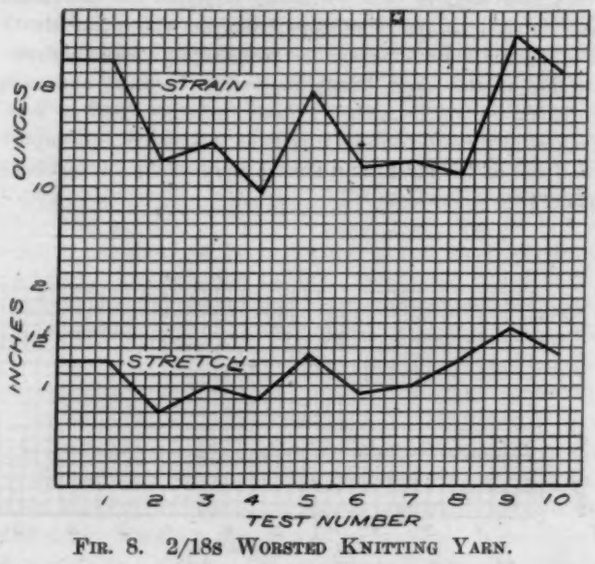


FIG. 8. 2/18s WORSTED KNITTING YARN.

(8) 2/18s worsted knitting yarn. This example is given to show a test made on a decidedly inferior yarn. The strength varies between 10 and 22 ounces. This means that for practical working purposes the average is considerably reduced.

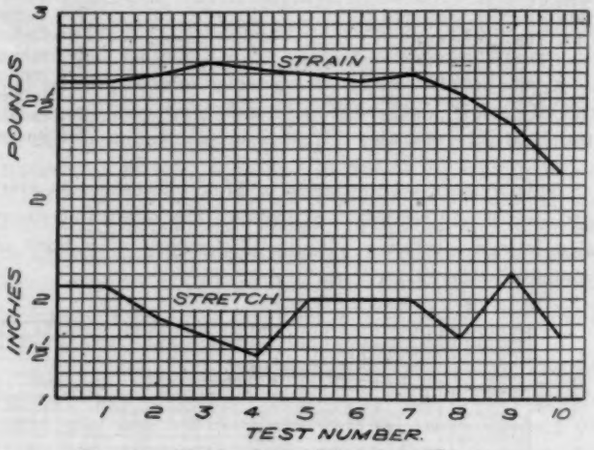


FIG. 9. COARSE 3-PLY KNITTING YARN.

(9) Coarse 3-ply knitting yarn. On the whole the strain is fairly even, whilst the stretch varies over about half an inch. The result of folding a yarn is generally to make its qualities more regular.

In comparing the foregoing diagrams, it is very striking that the cotton yarns should eclipse the others in regular-

ity of strength and stretch. After some experience in working by this method one can obtain an accurate knowledge of the qualities of the yarns used, the nature of the strength and stretch being shown by the regularity or otherwise of the graph line. Manufacturers are constantly being troubled by variations in new batches of what should be identical yarns and this machine determines the amount of deviation in direct percentage in case of dispute. Such methods of yarn examination are to be highly commended to any who desire a fuller knowledge of yarn structure.

DESIGNING TUCK PATTERNS ON SPRING NEEDLE MACHINES.

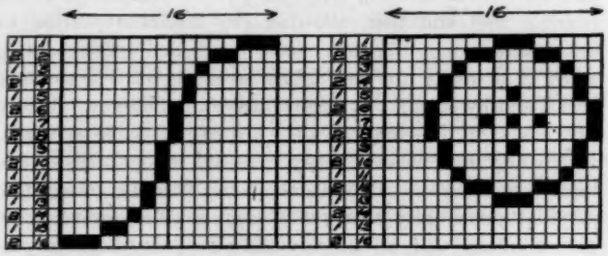
FURTHER DISCUSSION RELATING TO THE LAYOUT OF TUCK PRESSERS.

(Contributed Exclusively to COTTON.)

BY H. K.

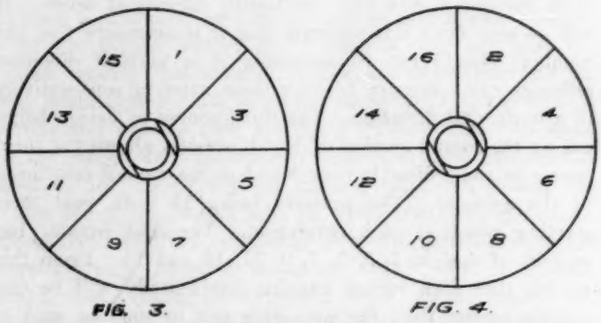
The knitter may desire to order the tuck pressers with the deep notches cut in them, in addition to the teeth already cut. In order that this can be done satisfactorily, a draft should be made out, with the necessary instructions for cutting the deep notches. The patterns shown at Fig. 1 and 2 have been suggested as patterns for which tuck pressers have to be ordered. The pattern having been marked off in one repeat, that is the width and depth. The spaces vertically being marked consecutively, the odd courses also being marked (1) and the even courses (2) to correspond to the pressers on which these courses are cut.

Taking a piece of design paper with the same number of spaces in width as there are teeth in the presser, also



FIGS. 1 AND 2. THE PATTERNS SUGGESTED.

divided into sections, each section corresponding to a course in the pattern. Our patterns Figs. 1 and 2 are 16 spaces wide and 16 spaces deep, making a total number of 256 stitches in design. But we are going to use two tuck pressers so that 256 divided by 2 would give us 128 teeth in each presser. Our needle cylinder contains 1040 needles and is 20-inches in diameter. We find that 128 divided into 1040, shows that the presser will revolve 8 times and 16



FIGS. 3 AND 4. THE SUBDIVISION OF THE PRESSERS.

teeth over. This makes it necessary to cut the courses as shown in Figs. 3 and 4.

Taking No. 1 presser and reading the pattern from left to right, we mark spaces on a section of design paper in the same way as first row of design. The third row of design would be marked on second section of paper. The fifth row following the 3rd. and so with remaining part of design. Care should be taken that the odd courses are marked off on No. 1 presser and the even courses marked on No. 2 presser. The starting point on each presser should

8TH REV.	2 16	16	2	4	6	8	10	12	14
	1 15	15	1	3	5	7	9	11	13
7TH REV	2 14	14	16	2	4	6	8	10	12
	1 13	13	15	1	3	5	7	9	11
6TH REV	2 12	12	14	16	2	4	6	8	10
	1 11	11	13	15	1	3	5	7	9
5TH REV	2 10	10	12	14	16	2	4	6	8
	1 9	9	11	13	15	1	3	5	7
4TH REV	2 8	8	10	12	14	16	2	4	6
	1 7	7	9	11	13	15	1	3	5
3RD REV	2 6	6	8	10	12	14	16	2	4
	1 5	5	7	9	11	13	15	1	3
2ND REV	2 4	4	6	8	10	12	14	16	2
	1 3	3	5	7	9	11	13	15	1
1ST REV	2 2	2	4	6	8	10	12	14	16
	1 1	1	3	5	7	9	11	13	15

FIG. 6. EXPLANATION OF THE STEPPING PROCESS.

be marked so that it can be easily distinguished. Fig. 5 illustrates the draft for cutting the pressers for Figs. 1 and 2. In the knit fabric, each repeat of the pattern, will appear as having stepped down two courses from preceding repeat. How this comes about may be seen by referring to Fig. 6. The rectangular spaces represent 16 needles in width and one course deep. The pattern repeats itself on the 17th space or as shown it takes eight revolutions of the needle cylinder to complete the pattern vertically.

The first column of spaces are marked in regular order from one to sixteen, the second column starts at three, the

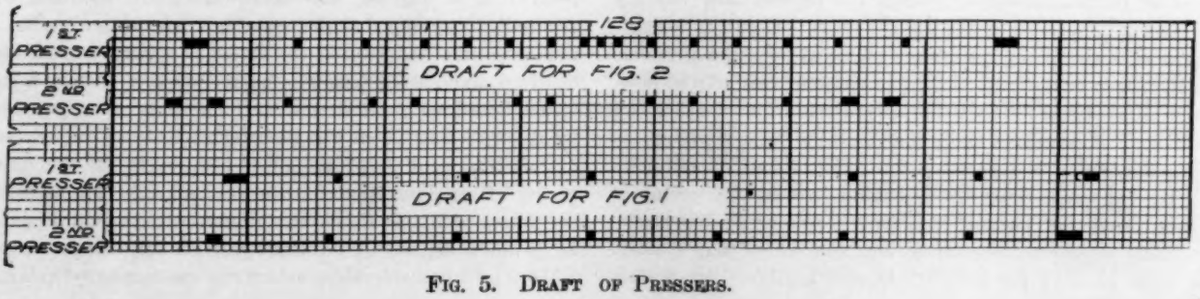


FIG. 5. DRAFT OF PRESSERS.

third column at five and the fourth column at seven. It will be seen from this diagram that it is necessary that the numbers should run consecutively in a vertical direction although not necessary to have them running consecutively in a horizontal direction. The third course of design being cut on the second section of No. 1 presser, allows the third course to come directly over No. 2 at the second revolution of the cylinder. The pressers being 16 teeth past their starting point at each revolution. The first presser has courses of design, 1, 3, 5, 7, 9, 11, 13 and 15. From this we see that each repeat running horizontally will be two courses earlier than the preceding one or may be said to have stepped down two courses.

The question may be asked as to the diameter limit of a tuck presser. Taking for example, a presser requiring 256 teeth and to be used on a 20-inch cylinder having 1040 needles. The simplest way to ascertain and the most exact way, is by proportion. A 20-inch cylinder has 1040 needles, what diameter of presser must be used to have 256 teeth?

As the number of needles in the cylinder is to the number of teeth in presser, so must the diameter of cylinder be to the diameter of presser. Or as 1040 is to 256, so is 20 inches to the required diameter of presser equals 4.92-inches. To the diameter found must be added the diameter of the needle used. The presser diameter being measured from the bottom of the notches. Say the needle is .022-inches in diameter, this added to 4.92 would make the presser diameter 4.92-inches. The presser diameter for a presser having 120 teeth can be obtained in the same manner, or 1040 : 120 : : 20-inch : 2.30-inch.

[The above explanation was prepared by our contributor in reply to some questions submitted by one of COTTON'S readers. Any other readers desiring further explanation on any part of this subject will receive prompt attention on submitting inquiries to this office.—ED.]

DYEING, BLEACHING AND FINISHING.

NOTES ON HYPOCHLORITE BLEACHING.

(*Contributed to* COTTON.)

BY L. J. MATOS.

Bleaching is a chemical process of great antiquity, and without going into the details of bleaching methods as carried out prior to the introduction of certain specified bleaching chemicals, it may be of interest to refer to the method still practiced in some parts of Europe and in Ireland, particularly in the flax districts, where the fabrics are repeatedly washed and exposed to the natural alternating action of sunlight and dew, the so-called crofting. The bleach crofts of certain parts of Ireland, those near Courtrai in Belgium and in Holland emphasize the importance attached to this method of bleaching. The object of the bleaching process is to destroy more or less completely, the natural coloring matter occurring in the fibers. In the so-called crofting process, the bleaching action is believed to be the result of the formation of nascent oxygen through the combined influence of moisture and sunlight. The ultimate chemical action of oxygen need not be gone into here at this time, but it may be well to bear in mind that whatever process may be used for bleaching the ordinary commercial fibers, oxygen is the element that is directly responsible for the result of the bleach.

Wool is chiefly bleached with sulphur, either by the well-known sulphur-house method in which brimstone is burned, the result being the formation of sulphurous acid gas, or by employing a solution of sodium bissulphite, from which sulphurous acid is disengaged by the addition of sulphuric acid or permanganate of potash, the process now happily going out of use. For the animal fibers generally, perhaps the most satisfactory results are obtained by using peroxide of hydrogen or sodium. As the purpose of this article, however, is to discuss chiefly the several chlorine bleaches, we will confine ourselves more particularly to discussing the bleaching methods for cotton and other forms of cellulose.

By far the commonest bleaching process for cotton is based upon the use of bleaching powder, a commercial chemical of indefinite composition, and which may contain as much as 35½ per cent of chlorine available for bleaching. The term bleaching powder is more expressive than the other common term, chloride of lime, a designation having no meaning whatever, but is a term frequently made use of and consequently cannot be ignored. Bleaching powder of good quality does not dissolve in water to a clear solution, there being always a large amount of lime present, which forms a thick mud which falls to the bottom of the solution tanks when bleaching liquor is made; consequently when preparing a bleach bath with bleaching powder, it should be converted into a thick cream or mud in order to break up lumps that may be present, and afterwards diluting with the proper volume of water, stirring well and then allowing the insoluble portion to settle, after which the clear stock bleach liquor is decanted, when it is ready for use. The strength of this solution varies and by strength is meant bleaching efficiency. Hardly two casks of bleaching powder are of the same strength, and while the bleacher may prepare two stock bleach liquors showing the same degree on the Twaddle glass, there is great probability that the bleaching efficiency of these two solutions will be entirely different. It therefore becomes necessary to make use of a chemical determination or assay of the bleaching powder, before dissolving, and to dissolve an amount that will carry into solution the proper quantity of available chlorine. In the finished solution, the chlorine exists in the form of calcium hypochlorite, a somewhat unstable compound, which, when it decomposes, forms calcium chloride, some calcium chlorate and hypochlorous acid.

Unbleached cotton fabrics, when immersed in a weak solution of bleaching powder, *i. e.*, a solution standing at from 1 to 2 degrees, and at ordinary temperature, will gradually lose its natural coloring matter, and after a sufficient time has elapsed the material is removed, allowed to drain and passed usually through what is known in the bleach-house as a weak sour. This weak sour possesses many objections which will be referred to later. The result of this treatment is to decompose completely the remaining traces of calcium hypochlorite mechanically absorbed by the fiber, with the result that hypochlorous acid is given off, while a deposit of insoluble calcium sulphate is formed which, to a considerable extent, is mechanically retained

by the fiber, thereby giving it a harsh feel. A serious objection to this souring is that, as it usually consists of sulphuric acid, this latter acid possesses marked destroying action upon the cotton fiber.

From the laundryman's standpoint, we must regard bleaching with some alarm; it appears to be a common custom in those laundries which prepare their own bleach liquor from bleaching powder, to boil the solution when being made. This is entirely wrong, the principal objection being that the bleaching powder does not dissolve any better, and further that the calcium hypochlorite is, during the boiling, changed into calcium chlorate, which has absolutely no bleaching value whatever. In the ordinary course of bleaching in a commercial laundry, and with the consequent desire for output, it is customary to heat the bleach bath and to pass the goods, after bleaching, through a heated sour, irrespective of the injury previously referred to on the part of the acid; a hot or even warm bleach solution is positively injurious to cotton and other vegetable fibers in any form, and it is in ignorance of this fact that so many garments are ruined in such a short time.

For many years we have been familiar with what is known commercially as Javelle water, or Labarraque's solution, which has been used in the household as a universal bleaching agent and disinfectant. This solution has, during recent years, gained considerable prominence on account of its very great value as a bleaching agent, and also from the fact, greatly in its favor, that it possesses, under ordinary circumstances, very slight destructive action upon the vegetable fibers, and when used properly, none whatever. This solution is chemically sodium hypochlorite in water and may be produced in two ways. The first and most important, and one which is easy to carry out in any bleach works or laundry, is as follows: One hundred pounds of chlorinated lime of maximum commercial strength, which, for uniformity of yield, should not test less than 33 per cent of available chlorine; this is mixed with 400 pounds of water; 60 pounds of soda ash are now dissolved in 200 pounds of hot water, to which, when solution is complete, 100 pounds of cold water are added. These two solutions are now mixed; the mixture is well stirred for one-half hour and allowed to settle, preferably over night; without disturbing the thick, white sediment, the clear, supernatent liquor is drawn off, the white mud is washed a few times with cold water, allowed to settle after each washing, and the clear top liquor added to the clear solution first removed, thereby diluting it until the total amount is about 1,500 pounds. This finished solution should stand at about 6 to 7 degrees Twaddle; if 1 to 2 pounds of soda ash is added, a slight additional precipitate will be thrown out, consisting of carbonate of lime, and which it is desirable to remove. The final stock solution should now react slightly alkaline. On the basis of 33 per cent assay, this sodium hypochlorite solution should contain 2.2 per cent of available chlorine.

Electric bleaching or bleaching by electrolysis, terms which have become very common during the past few years, has been the cause of considerable confusion to bleachers who have not been following the advances made, from time to time, in their art. Strictly, bleaching by means of electricity is a misnomer; such a process is not practically possible, but what is meant by the terms is bleaching effected by means of a chemical solution, the result of passing a current of electricity through solutions of certain salts, the most common of which is sodium chloride or "common salt." If a solution of common salt of proper strength is made and allowed to flow through an electrolyser charged with the proper amperage of current, the salt and the water making this solution suffer decomposition, the result being that sodium hypochlorite is formed, and this is briefly the process now becoming quite common in some of the larger wash houses and laundries. The process has been in use industrially for quite a number of years, sea water being the initial solution used, the result being an electrolysed solution possessing powerful germicidal action together with effective bleaching value. On a modern scale, electrolysers have proven their value, mainly on account of the economy in operating, small space required, cleanliness, and when bleach liquor is obtained in sufficient quantity, the process is immediately arrested by stopping the current.

From the commercial bleaching standpoint, keeping in mind the many classes of cotton fabrics which are now manufactured from dyed yarns of various colors, the goods after manufacturing being subjected to the bleaching process, the bleacher has troubles to meet and difficulties to overcome which are entirely different from conditions formerly existing when light, bright shades were produced upon bleached yarns, yarns bleached previous to dyeing.

With the advent of so-called fast colors, it has been found desirable to dye the cotton yarn in the so-called gray state with dye-stuffs possessing the valuable property of resisting the influence of subsequent bleaching, and while certain coloring matters have been produced that withstand this action, yet it was found that for the class of goods in question, when bleaching with solutions of chlorinated lime, not alone was the fabric greatly injured, either during bleaching in the first instance, or in the commercial laundry where the parti-colored garments were afterwards sent, but that the colors themselves did not withstand the bleaching process.

In order to overcome the possibility of injury to the goods and subsequent complaints, the bleacher, in his defence, was largely instrumental in searching for a bleaching agent that would produce the desired degree of whiteness and also conserve, to the fullest extent, the strength of the fabrics, and the result of this search was the discovery of the great value, not previously fully realized, in chlorinated soda or sodium hypochlorite. This solution, whether produced directly from a solution of salt by means of the electric current, or by double decomposition, as is usual, with chlorinated lime and soda ash, the result is always the same; but the strength cannot be assured, unless one of the analytical processes is used for making the assay. Any reliance upon the Twaddle glass will be altogether misleading, and for the benefit of bleachers who have been working with the chlorinated lime solutions only, it should be remarked that with equal volumes of chlorinated lime solution at 2 degrees Twaddle, and chlorinated soda solution at 2 degrees Twaddle in bleaching cotton, the latter solution will produce a direct bleach in less than half the time the lime solution will, upon the same grade of cotton, and when carried out in the cold (as chlorine bleaching always should be) there will be no injury to the fiber.

This fact was made very prominent by Hermite, as far back as 1888, who describes it fully in an application for one of his patents. Cotton goods bleached with sodium hypochlorite are always more easily rinsed out than when bleached with chlorinated lime, and do not require the subsequent use of any "sour" to complete the bleaching process.

Practical Problems Discussed by Cotton's Readers.

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so indorsed. This department is open to all.

SOME WEAVE ROOM QUESTIONS.

BY PRESIDENT.

EDITOR OF COTTON:

I have read with interest the various letters on loom fixing which have appeared from time to time in your paper and I have a few questions that I would like to have answered by a number of the practical men who contribute these letters. What I desire is facts derived from actual experience in the mill and I would like very much to hear from section men, second hands and boss weavers on the subjects outlined.

(1) About what proportionate part of the power taken to drive the loom is consumed by the picking motion?

(2) What is the upkeep cost of picking motion parts per loom per year? In answeirng give width of loom; average speed in picks per minute; and the names of the parts most frequently renewed in the order of their frequeney.

(3) What is the ratio of this cost to the total cost of loom repairs?

(4) What effect, if any, has the picking motion in limiting the speed of a loom?

NOTES ON LOOM FIXING.

BY STUDENT.

Skill is required to successfully treat all the different loom deseases. The greater the skill the more success in every effort. However, even the greatest skill finds its most desperate efforts handicaped at times. The loom fixer perhaps finds his supplies limited, this of course is for a good reason at times. It certainly shows a lack of ability to handle his section, when the supplies go too fast. But it isn't always so. There are a great many things in a fixer's everyday trips that have a reason and it would be well if the supply box was consulted.

Sometimes a man can make a section run for a few years and again he may not run it a month before his very poor methods are brought into question. Every part of a loom has its own work to do. A loom is composed of a number of mechanisms, while each mechanism has its particular kind of work to do. This is where the great fault may be. Some particular part may be overlooked. A fixer may well take pride in having a well balanced section of looms. An overseer may well ask himself, if he is doing that man justice. Such a man is a credit to the mill he works in. The secret is to fix right the first time you tackle a ticklish job and not be satisfied until it is as near perfect as your skill can make it. There is hardly any fixer running a first class section, that does not know where a back box plate is worn to such an extent that a picker, instead of weaving right through as it should, is continually breaking off at the side nearest the back plate or that can't see the remedy. The best remedy is a new wooden plate. If that can't be procured, then plane off the old one.

The picker should strike squarely in the centre near the back of the box when the picking stick is thrown back just as well as when it is pulled forward. However, some will prefer to replace the picker when it breaks and the next thing is a shuttle turned over and smashed between the temple and lay. The only reason for this is laziness pure and simple. Again a rocker shaft becomes worn on one side more than the other. Don't try and make the shuttle travel down a hill and up again. You may be able but sooner or later you'll know about it. Turn the shaft around with a pipe wrench or pack the box with a few pieces of hoop iron and you will get good results.

POINTS ON MILL LIGHTING SYSTEMS.

BY ELECTRICAL ENGINEER.

EDITOR OF COTTON:

In an issue of a Charlotte, N. C. paper, known as *Mill News*, dated July 27th, appeared an article by A. E. Escott which has for its purpose an exposure of causes for poor mill lighting. In justice to the many manufacturers and able mill engineers, who are readers of COTTON and have good lighting systems to their credit and to others who are seeking information on this subject, I offer a few vital facts on economic illumination. Those who have read this article in *Mill News* and applied the test of the so-called properly designed systems as given therein, should not take the matter too seriously if the system did not check up. The author has endeavored to make a learned stab at a vital question and although the information is clothed in verbiage of a scientific nature, it will be found that it approaches the scientific only as a limit.

Illumination engineering is now a practical science and if there is a clear understanding as to how much light is required and how it can best be used, the distribution system is a simple problem. The following statement is taken from the article in question and refers to the life of lamps: "The usual life of a 16-candle 110 volt incandescent carbon lamp is about 800 hours' burning. If used at 115 volts, or even at 112 volts, its life will be much less. It it is used at 105 it will look like a tallow dip."

It is true that the voltage at which a carbon lamp or any other lamp burns, determines to a large degree its life. Lamp manufacturers have now standardized the voltage for incandescent lamps at three ratings known as the high, medium and low. The high and low ratings are four volts apart and the medium is the normal rating. I give below a table of the actual candle power, watts consumed and life for a sixteen candle power carbon lamp and a 25 and 60

watt tungsten lamp. It will be observed that the normal life of a 16 c. p. carbon lamp at 110 volts is 1000 hours instead of 800 hours, as given by Mr. Escott. It will also be seen that at 108 volts the lamp gives its rated candle power. At 105 volts the candle power would be about 15. This is quite an appreciable contrast to the tallow dip, or even the good oil lamp of the medium size. It is interesting to note in the table that the 16 c. p. carbon lamp corresponds to the 60 watt tungsten lamp as to the amount of energy consumed and to the 25 watt tungsten lamp as to the quantity of light emitted.

Type of Lamp	Size in Watts	Voltage	Actual Watts consumed	Actual Candle power	Hours Life	Cost of lamps and electric energy at 10c. per K. W. per 1000 Candle hours.
Carbon	60	High	60.00	20.2	700	31.3 cents
		Medium	57.8	18.3	1000	32.6 cents
		Low	55.7	16.4	1500	35.0 cents
Mazda or tungstein	25	High	25.0	19.1	1000	16.5 cents
		Medium	24.2	17.7	1300	16.5 cents
		Low	23.4	16.4	1700	16.6 cents
Mazda or tungstein	60	High	60.0	50.8	1000	13.8 cents
		Medium	58.2	47.3	1300	13.9 cents
		Low	56.5	44.2	1700	14.1 cents

In regard to the formula which Mr. Escott gives, it is unfortunate that he did not give its limits of application, as it can only be used on direct current systems. In a large number of mills at the present time, power is being purchased as three phase alternating current. In such a system the lights are often installed across the separate phases, if the motor load is not too great and fluctuating. Mr. Escott's formula to apply to alternating current systems should be as follows:

$$\text{Circular mils} = \frac{10.79 \times d \times W}{P \times E^2 \times (PF)^2}$$

Here 10.79 is the resistance of one foot of commercial copper wire having a diameter of one mil; d= the length of the wire in feet on one side of the circuit; W = total watts delivered; P= loss in line in per cent of power delivered; E= voltage between main conductors at receiver end of circuit; and P F = power factor of circuit when motors are used.

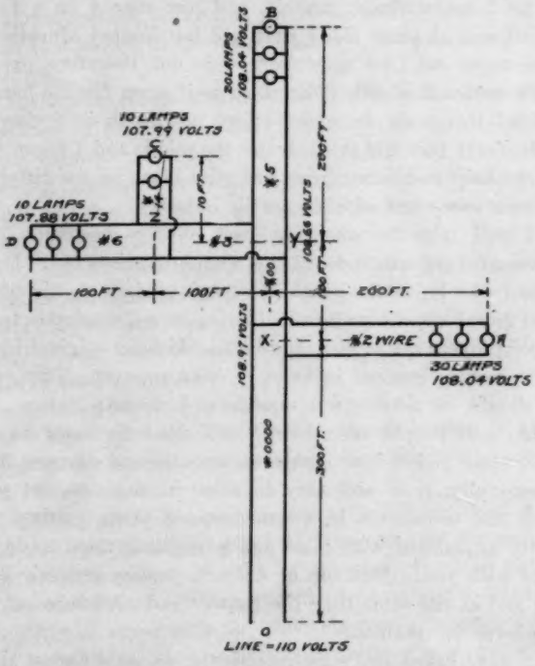
For direct current his formula is correct as:

$$\text{Circular mils} = \frac{10.79 \times 2d \times \text{current}}{\text{Drop in volts}}$$

Formulas are very good guides for an engineer, however if the beginner fails to have the experience to enterpret them, they are often very expensive and dangerous tools. For instance, Mr. Escott has used in his formula without explanation the resistance of a cir. mil foot of copper as 10.79, which is theoretically correct. Unfortunately such refinement is of no value as far as accuracy is concerned, when it is remembered that the purity of copper wire is not a constant; that the difference between successive sizes of wire on the market in the numbered sizes varies as much as 60 per cent.; that distances are not measured within one or two per cent of accuracy as a rule; and that other varying factors enter into the problem.

The layout of a lighting system, however, is not a complicated problem when viewed from a sane and engineering standpoint. The writer has assumed a set of practical circumstances and gives below a method which with the use of a reliable wire table will give satisfactory and economical operation.

In Fig. 1 a circuit with four groups of lamps of varying size and distance from the source, 0 is shown. The problem is to select such size of conductors as will



LAYOUT OF LIGHTING SYSTEM.

give, say 108 volts at each of the points, A, B, C, D. Assuming one-half amp. per lamp, we find that we have 35 amp. in part OX, 15 amp. in branch XA, 20 amp, in XY, 10 amp. in YB, etc. Now consider for a moment that we have four separate circuits, OA, OB, OC, and OD. To obtain 2 volts drop in 1,000 ft. of wire, with 15 amp. load calls for a resistance of .133 ohms total, or .000133 per ft. This is fulfilled by a No. 1 wire for circuit O.A. In like manner we obtain No. 3 for OB, No. 6 for OC, and No. 5 for OD, each considered as a separate circuit. Now, in combination, we see that for part of circuit OX, we should use a wire about the cross section equal to the sum of No. 1, 3, 6 and 5, or about a No. 0000. Now 35 amps. flowing through 600 feet of No. 0000 gives 1.03 volts drop, therefore the voltage at point X will be 108. 97 volts. Now we cannot assume that No. 1 wire will do for XA, but we must compute the proper size from this later figure. We find that No. 2 wire will produce a drop of .93 volt from X to A, so that the voltage at point A will be 108.04 volts. In this way we proceed from point to point. The method is somewhat cut and try, and often we will come out on some little branch with a result that will compel us to change the size of a circuit previously considered. Following the previous methods we take No.

00 for part XY and with 20 amps. get a voltage of 108.66 at point Y. It will be noted that branch ZC figures out No. 14 wire, but for mechanical reasons larger wire may have to be used. We see also that there is a variation of only .16 volt over the system. In high tension A. C. systems, the transformer regulation has to be taken into account. If there are any features of this matter not made plain, I shall be pleased to take them up further with any reader.

THE SUCCESSFUL SUPERINTENDENT.

BY E. M. H.

As I am workman myself, and was reared on a farm until I was 21 years old, I have had but limited educational advantages and I am no writer. I do not, therefore, expect applause for this article, but I write it more for the benefit derived to myself from the effort put forth in trying to write, for I feel that it cultivates the mind, and I hope, too, we can help each other by exchanging ideas on the different subjects connected with the textile industry.

I will take for the first part of my discussion, the "successful superintendent" and what comprises one. First, a man who holds the place of superintendent should be of good moral character; he should also be approachable to all the employees under him, and he should have original ideas, never resting content in being a mere copyist. Then, too, he should be a man who understands human nature, for cotton mill people have their peculiarities the same as any other class and to thoroughly understand and manage them successfully, it is necessary to come in close contact with them and to become, in a sense, one of them, getting perfectly acquainted with them and permitting them to do the same with you. This can be done by justice and fair dealing and at the same time the respect and confidence of the employee is retained.

I have heard two superintendents say at different times that the least one had to do with the operative the more respect the superintendent would win. Their idea seemed to be to treat the help as under dogs and make it plain to them that they were so considered and were kept at a distance. I do not indorse this plan, however. It makes it very hard for the overseer of the different departments to keep contented help under these circumstances.

A superintendent is always better able to perform his duties if he has worked up in the mill and is thoroughly familiar with each process, that the cotton passes through from start to finish, as well as with the different machines in each process, so that he will be able to locate any trouble that may arise. A superintendent may be able to make any calculation that is necessary in the whole process, as far as calculations go, but unless he is experienced he will not be able to locate the trouble when it occurs. Technical training is all right and is a great help and every man who desires to be successfull should get all of such training that he possibly can, but, at the same time if he has no real practical training in connection with his technical knowledge, he will very often find himself "up against it." On these occasions he will have to depend entirely upon the men under him and await results before he can tell anything about what has been done. I have yet to see a successful superintendent who had never worked on the inside. But in the most successful mills in the country, the management is in the hands of those men who have worked up on the inside and who have, at the same time, studied and read and acquired a technical training as a side issue. They know the work in all its phases and they also understand the mill people.

I say this not to hurt any young superintendent's feelings but merely as an expression of my own ideas on the subject, formed from my own personal observation. I am by no means hostile to technical education for I think it very essential to success if rightly applied in conjunction with practical experience. A practical man without education would often be called upon to face difficult situations when it comes to making certain changes, but I do not think he would find the situation as difficult to meet as the technically educated man who lacked the practical experience.

So much for the qualifications of the superintendent. Now we will consider some of the troubles of the mill in general, beginning at the opening room. In the first place I think that most mills are too careless about grading and mixing the cotton. My idea is to get your cotton all the same length of staple, as nearly as possible, for of course it is impossible to get it exactly the same, but much can be done in this direction by the proper care of a competent judge. The more nearly even the length of the staple the stronger and more even will be your yarn product. A small mill that cannot afford to employ a first class cotton grader should have this work done by the carder or superintendent who are both supposed to know what is best in mixing. As much should be mixed at one time as you have room for and each bale should be completely torn to pieces as the fibre will naturally expand and straighten out to a certain extent after having the pressure which it had during the time the cotton is in the bale taken off, especially if it is compressed cotton.

The picker room is the one place in many mills which is not properly looked after. These rooms are generally attended to by the cheapest help that can be secured. The aprons and grate bars are not kept clean and the evening mechanism is not kept properly oiled and cleaned, thereby causing uneven laps, which is the foundation of uneven yarn. Such being the case there is no way to overcome the evil done in this one starting process and you are bound to have bad work all the way through.

The card is the next machine that causes more imperfect work than any one machine employed in the whole process from the picker room to the cloth room, if it is improperly set and looked after. If your picking machinery is right and makes a nice, even clean lap and your card is right, you will get an even sliver to carry to your drawing frame.

There are still many ways to prevent your making good roving, such as bad rollers; too much draft; too much twist on fly frames and slubbers; too little twist causing it to stretch between the delivery roll and flyers; wrong lay gear, causing the roving to have tendency to pile up on bobbins and causing it to stretch and be uneven; as well as various other things which I will not mention, but all of which depend upon the man in charge. I would like to hear from other textile workers through the medium of this department.

An American consul in the United Kingdom reports that a firm of importers in his district desires to be placed in touch with American manufacturers of Indian cornstarch. For further information apply to the Bureau of Manufactures, Washington, D. C., and refer to file No. 7125.

MORE ABOUT RAILWAY HEAD AND SOME NOTES ON CARDS.

BY MANAGER.

I note in the August issue of COTTON "B. M. P." takes exceptions to my remarks on the railway head, and improved railway head in issue of June. In my article I did not intend to throw any blame on my critics, and I thought some of them had never worked on the old system of carding and had no experience on the old railway head as hitched up to a line of cards. Hence they were as much in the dark as to its workings, as they thought I was with the improved railway head. I assume that I know of the improved railway head before any of my critics, as I had a little to do with its design in its inception, but have never yet seen any advantage it has over the old head where the front roll did the evening. This may shock "B. M. P.", but having used both in the same mill, running the same stock and same number of yarn, not one grain of benefit was shown, one over the other. Hence of the two I would take the old style of railway head instead of the improved head, no matter what the conditions might be. Now I suppose "B. M. P." will say the fools are not all dead yet.

If I was to purchase railway heads to go up to a line of cards, I should make a plan of the room, showing the location of the cards, the distance between them, length of railway box and apron, or railway trough as "B. M. P." calls it, and order the "trough" and all fittings, for same. So I would not be fooled, as I have bought too much of these fittings to leave anything out of it. I think moreover, that any mill man would know what was necessary to make this complete, even "B. M. P."

The name "improved railway head," was given the head where the back roll does the evening, upon its inception, and it is now advertised as such by its builders, hence I will not discuss this word "Improved." If "B. M. P." was to order a lot of railway heads and did not specify which he wanted, I am inclined to think, he would be asked to specify. In this event how would he do it? As I have remarked in a former article, I have worked in the mill where the same method was used with the wooden top flat card with 18 tops. The silver was taken into a can the same as now on the revolving top flat card, but up to a drawing frame with five lines of rolls and put through to a finish just the same as now.

The doffer on these cards set up high, allowing a 30-inch can to set under the coiler, as now. Note these cards were only 30-inch wide with 36-inch diameter cylinder running 120 revolutions per minute. Some cases were single carding and others double carding. Single carding produced 150 pounds per week per card. Double carding produced 300 pounds per week, of 66 hours. Later on these coilers were taken away, and the railway head, (with trough of course), was substituted and there was a marked improvement in the yarn for eveness and weaving qualities. Note that these cards did not have the self stripper, the tops being stripped by hand card, one half every eleven minutes, with one cylinder, making all the toops, and two cylinders stripped every 22 minutes.

Then came the self strippers, put onto these old cards. In time these old cards were thrown out, and the new 36-inch self stripping cards put in and it was thought a great stride was made when these 36-inch cards with double carding, would do 400 pounds per week of 60 hours. But mind, the carding on the 36-inch card was not as good as it was on the 30-inch card, and could not be made so. I would like to have "B. M. P." think this over, and tell us why. This carding story is away off from the railway heads, but they have a mighty close relation to them, hence I inject it in my letter at this place.

I think it best, if I do not claim it necessary, to use some context to designate the railway head evened by the back roll, from the same machine using the front roll in evening the silver as it goes through. The first builders of the improved head used the word "improved," hence I used it to designate it from the old head. One evens with the back roll, running faster or slower, as the case may be, and the other does the same work with the front roll running faster or slower, which latter has got to be used when a line of cards is attached to the head, with the "railway trough", as a carrier.

He acknowledges that he knows of only one case where five lines of rolls on the drawing frame was used and that was a failure. Does he think this was the only lot of these drawing frames ever used? If he would investigate he would find that 30 years ago most of the first class mills had them. But don't think that I recommend them. I condemn them, and the first mill I had anything to do with, that I could, I changed them over to three lines, and got much better results, with less cost. He says further that he never heard of the revolving flat cards being connected with the railway head and trough. I fear that there are lots of things about the mill that I never saw or know about, and in this case I know from his letter that he is also lacking in knowledge of this matter and there may be much more he and I don't know about.

I do not make it a point to tell of any thing about a mill and then tell what mill it is. If I was to visit his mill and saw something in it worthy of mention, I would not tell where the mill was where it could be seen and I think "B. M. P." will agree with me that this would be poor policy. But nevertheless there are several mills where this system is in use and some where they tried it and did not like it and changed to the coiler system.

As the old darky said in his prayer "Oh Lord, I do believe the world do move, but I am not sure of it.' The same to us "B. M. P." we do believe what we know, but we are not sure we know it all. I will close this by making a statement. I will take the 30-inch wood top flat cards, hitched to the railway trough and head, double card the stock, and produce better yarn, than any man with the revolving top flat card with the improved railway head, each of the cards doing an equal amount of work according to the carding surface, but it might cost a little more per pound. What about it "B. M. P."?

A CORRECTION.

EDITOR COTTON:

In my article in August COTTON on "Bleaching and Finishing Processes," an error was made for which COTTON is not responsible. In the second paragraph the chemic solution is given as "$\frac{3}{5}$ of 1 per cent." This should be $\frac{3}{5}$ of 1 degree twaddle, which is a very much smaller quantity of chemic than is represented by $\frac{3}{5}$ of 1 per cent and compares with the $3\frac{1}{2}$ degrees twaddle in a subsequent paragraph. (Signed) E. D. JEFFERSON.

WEAK YARN.

BY B. M. P.

A careful study of the situation as outlined by "Double U" will reveal several points where damage to the stock might be done, which would cause the yarn to be weak although leaving it even. We ordinarily expect to find a weak yarn to be an uneven yarn, unless such weakness is due to lack of twist, poor staple, or staple too short for the size yarn to be spun. However, assuming that there is no fault in the cotton, that the yarn has the proper amount of twist and is even, there are several causes that would tend to make the yarn weak.

First. In running the Egyptian cotton, which will be longer staple than the uplands, there is a chance of having the settings between the beater blades, the feed rolls and the dust bars too close. The length of the staple should be carefully noted and the settings at the above points made accordingly. The close settings would tend to make the beating action of the blades too harsh on the cotton and thus weaken or break the fibers.

Second: There is danger, in dealing with a long stapled, fine fibered cotton, of beating it too much in the pickers, and for this reason the use of fewer beating processes in the picker room is often used, depending more upon the card and comber for the elimination of the dirt and trash. Also, to overcome any tendency to damage the fibers by the pickers, the beaters are often run slower than when handling uplands. In this case the speed of the feed apron of the machine is kept the same, thus feeding in the same amount of stock, but of course not hitting it as many blows as formerly. The whole idea is to get the cotton as clean as possible with little or no damage to the fibers by the picking process. Arrangements are in use calling for only two beatings to the cotton while going from the bale to the card. The cotton is fed into an automatic feeder connected to a breaker lapper. This gets the cotton into laps, which are fed direct into the back of a finisher picker, the laps off the front of which are taken to the cards. The lack of cleanliness, due to the limited cleaning effect of the two machines, is more than overbalanced by the lack of injury to the fibers that would have been the case if the full complement of picking machines were used.

Third. In running long stapled cotton through cards adapted for use on uplands, the feed plate is liable to cause some trouble. The feed plate for long staples should have more nose to it than for short staples, so that the distance from the bite of the feed roll to the setting point between licker-in and feed plate will be just a little longer than the length of the staple. In trying to run a long staple cotton through a card with a short nosed feed plate, there is great danger of injury to the fibers by the teeth in the licker-in.

Fourth. The fibers are often damaged by too much carding, that is the card settings being too close and the cotton remaining in the card too long.

Fifth. The action of the comber is such as to have a strong tendency to remove, to a large extent, the natural curl and twist of the fibers, and when two or three drawings are used after the comber, the sliver may be weak on this account and not necessarily from any damage to the fibers themselves. This cannot well be overcome when the quality of the finished product is the main point to be considered, though it can be helped by cutting out one process of drawing between the comber and slubber. This condition is often met and necessitates the use of spring bottom cans to enable the slubber to get the sliver out of the cans.

Sixth. Overdrafting is another cause that will produce weak yarn, though the yarn in this case is very apt to be uneven.

Any of the above or any combination of two or more of them will produce weak yarn and yet not cause the yarn to be uneven, while most other defects in the manipulation of the material that would cause weak yarn would also be very apt to produce uneven yarn.

CAUSES FOR UNEVEN WORK IN THE CARD ROOM.

BY C. K. W.

The greatest trouble that a carder has is uneven work and there are a great many things which will cause this. To find this we must start in the picker room. The cotton should be well mixed and the feeder kept in good condition. The operator should not fill the hopper too full nor should he let it get too empty. Next we should examine the intermediate, for it is here that a great many uneven laps may be made by a careless hand who permits his laps to run out, or laps the ends when putting on laps. Then comes the work of the finisher; in dry, windy weather these laps vary a great deal. The general rule with the majority of overseers is, when the laps vary a half pound each way they are taken back to the intermediate and run over. This, however, should not be done. Heavy and light laps should be put in different places and the card hand should be told to mix them in with the others. For example, take three or four or a half dozen, all weighing correctly but with one that is either too light or too heavy.

Cards should be ground well, a good emery being kept on the grinder. Next the sliver and ribbon machines should be carefully watched and a reliable operative kept on these machines, who should be taught not to allow any lumps to go through, as a lump is liable to tear up half a lap. The combers should be watched and there should be a good oiler here, one whom the carder can trust. The leather rolls should be oiled every morning and these rolls should be ground to an exact size from end to end. If this is not done it will cause the sliver to be cut and it is right here that a great deal of uneven work may be done. If more than one end comes down at a time in the frames, that end should be torn down from the drawback and the singling pulled out. From this we pass on to the next drawing. There should be good rolls kept on these and the weights watched closely, for if a weight gets down every carder knows what it will do.

The slubbers and speeders often cause weak and uneven work, although there is but little attention paid to this feature. The cause for the bad work here is found in the tension frames running with the ends too tight, which will cause the running to be stretched almost into pieces. Carders will find less trouble from uneven work if they will run a slack tension.

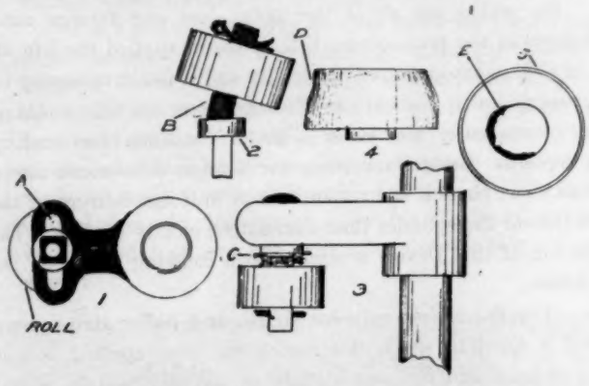
THE SHUTTLE THROWING MECHANISM.

BY GEORGE RICE.

The roll of the picking motion of a gingham loom slipped with its stud. The fixer endeavored to tighten the roll in place by turning down harder on the nut holding the stud. But sometimes there are studs in these positions which cannot be properly tightened.

While the builder of the loom calculates that the tight nut on the threads of the properly set stud will retain the picker roll in position regardless of the hard blows delivered by the picking mechanism of the loom, the stud often slips. I have had the experience many times. The trouble can be remedied quite readily. I usually tighten up the stud a few times, and then if it persists in slipping I try a new stud, for the reason that the threads on the old stud may be worn, thereby permitting the nut to free itself. But there may not be an assortment of the right kinds of picker roll studs on hand. Then a good way to do is to fill in the void in the slot with some pieces of leather, as at A figure 1. The pieces of leather can be plugged in evenly and securely. The washer of the stud will close in on the side of the pieces and hold them fast. Then your stud will cease slipping.

I saw a loom picking very hard. I examined the picker, the stick, the sweep, the lay, the head motion, the crank arms and picking motion in general. I was surprised to

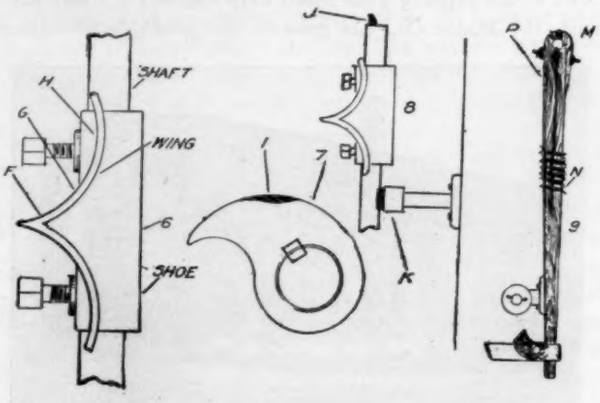


SOME PARTS THAT NEED ATTENTION.

find that the ball of the picking motion had bent the stud over as at B figure 2. While the loom ran with the picker ball in this order, the ball had such a hard time getting over the wing of the picker shoe, that the loom ran hard. The lay trembled and jumped at every revolution of the crank arm. The threads of the warp were being strained and broken. Uneven cloth often results from such defective management of some part of the loom. This trouble was fixed by simply removing the stud, placing it in a vise and straighting the shaft with a smith's hammer.

Again the writer observed a picking motion on a cotton loom making the loom jump at every trip of the shuttle. I could see that something was wrong with the picking motion by a glance. The trouble was due to employing an excessively long stud to carry the picker roll. In order to make up the void on the stud, the inner side of the stud spindle was wound with wires as at C figure 3. This wire acted as a washer and threw the ball outward towards the end of the stud. The resulting action on the wing of the picking shoe, made the loom pick severely. In order to set this job right, a new stud of correct length for the ball was put in. Then in another case where the loom was making a jump and exerting itself at every throw of the shuttle, the picker ball was found worn with a groove as at D figure 4. While it is possible to make a loom run smoothly even if the balls are worn unevenly, it often occurs that the conditions are such that a scored ball will result in a hard pick, as in this instance. Some men simply reverse the ball. Some turn the ball down to make the high side even with the low side. This time we put on a new ball.

Then you will discover balls in which the bearing is worn out as at E figure 5. Again a new ball is the best remedy. You cannot get even work from a ball in which the bore is unevenly worn as in this sample. Going from the balls to the shoes, we find that some men get a loom into a hard picking order by setting the picker ball, so that the ball will contact with the wing of the shoe as at F, Fig. 6. If so, you get a hard, knocking, sharp pick. Even if you set the ball to strike at the center G you do not get



FAULTY PICKER MECHANISM.

a full even swing. You should not go to the other extreme and make the ball contact with the outside edge of the wing. The best part to hit is at about H. Then you give the ball the benefit of the full line of surface of the wing.

Sometimes tappets are used instead of balls. In some looms you will find the surfaces of the tappets worn as at 1, figure 7. If so, your loom will pick hard. It is then best to drive off the worn tappet and substitute a new one. I find picker shoe shafts worn as at J in the frame sockets occasionally. This is due to lack of lubrication of the ends. The weavers seldom oil these bearings. The fixer has to do it. I was troubled with picker shoe shafts bending down under the strain of the pick and pick work on heavy goods at one time and introduced center picker shoe shaft supports by using metal braces picked up in the shop and set up on the floor as at K figure 8. This center bearing for the shaft prevented the shaft from bending.

One loom failed to throw a shuttle of the old style type due to the spring in the shoe treadle, which was wood. I found the treadle patched at M with a bolt P because the treadle had split. It was likewise patched with wire at N. this of course made too much give to the treadle and the shuttle could not be driven across the raceway in season to prevent the loom from banging every few minutes. The thing was quickly set to rights by putting in a new treadle.

Orders for cotton goods continue to be placed freely by South African houses with British manufacturers.

NEW MACHINERY AND TRADE NOTES.

A NEW FACTORY AT FERNWOOD, PA.

THE MODOC CO., INC., of Fernwood, Pa., and Philadelphia, has recently erected a new factory at Fernwood which is a suburb of Philadelphia. This factory is 40 by 100 feet, three stories in height and practically of fireproof construction throughout.

While the factory is not a large one the 12,000 feet of floor space it covers is so arranged that it is considered one of the most modern and best arranged and equipped cotton sizing factories erected to date.

The Modoc Co., has been making sizing for comparatively few years but it seems to have adopted a new idea in the manufacturing and marketing of this important product. Following the example of the most responsible soap manufacturers who now urge buyers of soap to buy only on the basis of the actually guaranteed soap contents of their product, the Modoc Co., has gone on the principle of selling

THE NEW FACTORY OF THE MODOC CO.

their sizing with the idea that the buyers were simply buying so much tallow, cocoanut oil and other high quality oils, greases and chemicals manufactured into sizing, and sold on the basis of delivering an approximate equivalent of these staple products plus the cost of manufacture, but making no charge for its knowledge of manufacturing the crude materials into shape for the consumer's use. The foregoing fact may account for the very small quantity per batch required of Modoc sizing.

The rapidly increasing trade of this concern in its comparatively new field and the high regard in which its products are held by its comparatively new field and the high regard in which its products are held by its many customers, has shown the wisdom of this new departure in sizing manufacture. In addition to sizing their factory is equipped in the most up-to-date manner for the manufacture of Modoc high grade soap powders, mill and special soaps and the compounding of oils and greases.

W. P. Hazlewood has been appointed the Southern agent for the UNIVERSAL WINDING CO., of Boston with headquarters at Charlotte, N. C. He was several years in the employ of the Universal Winding Co., and left them a few years ago to travel for the Whiten Machine Works. His acquaintance built up among Southern manufacturers in handling general lines of machinery will be of service in looking after the special machines of the Universal Winding Co.

PATENT DUPLEX CARDING DEVICE.

This is an important invention and improvement in the carding process. The inventor has for several months been working with the HOWARD & BULLOUGH AMERICAN MACHINE CO., LTD., of Pawtucket, R. I., developing this device. A large number of New England mill treasurers and superintendents have seen the device in operation and orders have been placed by them for this device to be applied. We give below a brief description of the invention, its object and accomplishment.

This device consists substantially of a roll very similar to the lickerin but covered with a special clothing. This roll is placed underneath and closely adjacent to the lickerin. It is positively driven in the same direction as the lickerin but as a very much slower speed. A doffing comb removes the short fibres and foreign substances from this slowly revolving roll. The object of the device is to remove motes, leaf, short fibre, and foreign substances from the cotton before it reaches the cylinders and flats. The percentage of waste taken out by this duplex carding device can be varied according to the quality of work desired and the stock used. A range of from 5 per cent to 25 per cent being possible without changing the settings of the card.

By taking out all of the motes, leaf and foreign substances at the point where this device is applied the life of the clothing is increased materially and it is not necessary to grind and strip the card as often as formerly. The clothing is consequently always in a better condition for carding purposes. Besides removing the foreign substances, motes and short fibres it insures an even or uniform delivery of the cotton to the cylinder thus eliminating cloudy carding. The action of this Device is similar to a combing action on the cotton.

The flat strips, cylinder strips, and doffer strips taken off a Card to which this device has been applied, can be put back into the regular mixing, as they contain practically no foreign matter or nep, this having been removed by the device. Ordinary flat strips, cylinder and doffer strips can be reworked on a card with this device without any straight cotton being mixed with them, and the production is equal to that of a card runing on straight cotton.

The direct results claimed for this device are superior quality of product practically equivalent to double carded work. Increased product owing to the clean condition of the cylinder and flat clothing, enabling the card to do its best work at all times; better yarn and longer life of clothing, foreign substances having been removed from the cotton before it enters the cylinders and flats there is nothing to injure the cotton and less grinding is required, as the points remain in good carding condition for a longer time.

The simplicity of this device will appeal to any practical carder. There are no high speed parts to cause wear, and nothing where derangement of mechanism is possible. Any mill treasurer, superintendent, or carder is cordially invited by the Howard & Bullough American Machine Co., Ltd. to investigate this device at their works where a card is in operation.

CHANGE OF OFFICERS.

Robert F. Herrick of Boston, president of the Lowell Machine Shop and the Kitson Machine Shop, Lowell, Mass., has been elected treasurer of both of these concerns, succeeding Haven C. Perham, former treasurer, who died a short time ago. Rogers W. Davis, who has been connected with the Southern office of the Lowell Machine Shop in Atlanta for a number of years, will be sales agent for both the Kitson and the Lowell Shops, with office at the Kitson Machine Shop, Lowell. The Southern office of the Lowell Shop was discontinued on September first.

WEAVERS' MILEAGE.

The following interesting report of a rather peculiar test is reproduced from the July issue of *Cotton Chats* a publication sent out monthly by the DRAPER CO., Hopedale, Mass.

"The weavers' vocation has always been considered to be largely one of labor; hence any improvement which reduces the amount of physical energy consumed is an advantage to all concerned.

"About two years ago a question arose in regard to the comparative number of miles traveled by weavers on Northrop and common looms. It resulted in a test being made in a mill having both kinds of looms. The Northrop loom weaver operated twenty looms and the common loom weaver eight. The goods were 36 inches wide, 30s warp, 40s filling, 40 picks per inch. Pedometers of standard make were purchased for each weaver and adjusted for the individuals using them.

"The result the first day was five miles for the Northrop loom weaver and twelve and one-half miles for the one on common looms. The pedometers were exchanged and readjusted from day to day but the mileage in every case was very much greater with the common loom weaver, averaging about twice that of the weaver tending two and one-half times as many Northrop looms. The last day of the test showed two and five-eighths miles for the Northrop loom weaver and four and one-half miles for the common loom weaver.

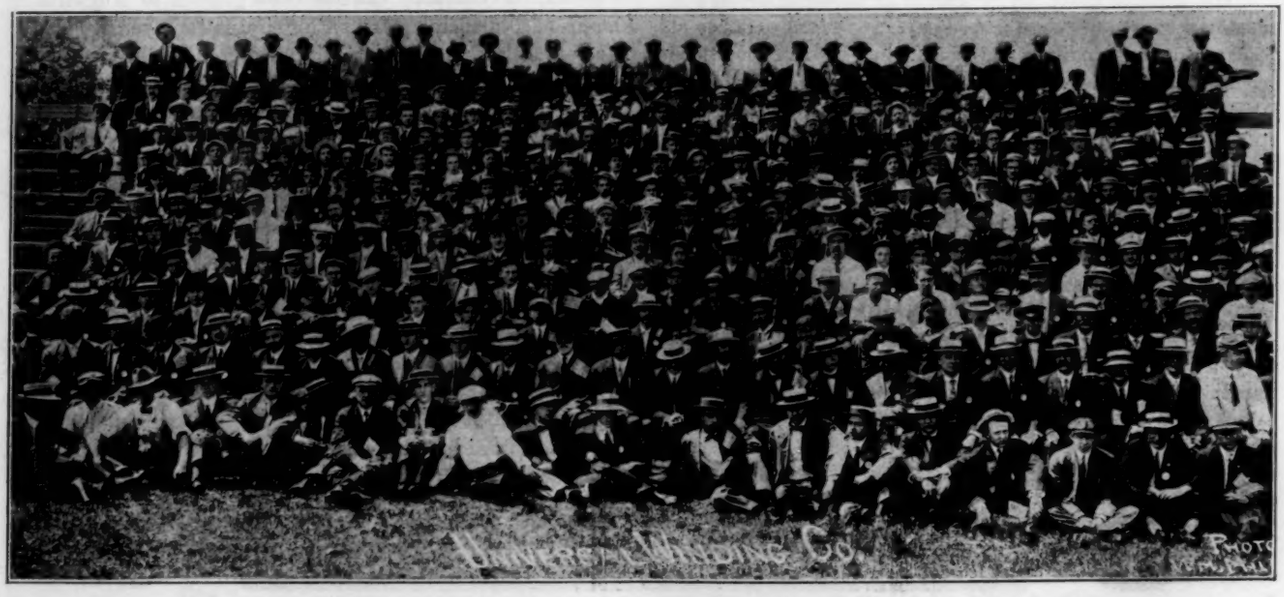
"This test demonstrated conclusively that a weaver travels about 100 per cent. farther in performing the work required to operate eight common looms than in operating two and one-half times as many Northrop looms. It also showed that there may be a waste of energy in either case, and that a proper study of the operations to be performed may materially reduce the weavers' labor and at the same time produce as much or more cloth."

THE ALLIS-CHALMERS CO., of Milwaukee, Wis., are distributing bulletin No. 1080 describing alternating current generators, engine and fly wheel types and bulletin No. 1512 illustrating and describing their compound corliss engines.

ANNUAL OUTING OF THE EMPLOYEES OF THE UNIVERSAL WINDING COMPANY.

One of the features of the past month was the annual outing and field day extended to their employees by the UNIVERSAL WINDING CO., of Providence, R. I., as an appreciation of their faithful services. The well known summer resort of Rocky Point R. I., was selected for the site of their carnival and about 350 employees wended their way to that pleasure resort by trolley, steam boat and motor boat. Three special cars were run from Providence, while something like ten motor boats, also carried quite a number.

A long list of athletic events including a thrilling boat race and a real overtime ball game were among the events of the day while races of all kinds for handsome prizes created much interest and amusement. The sports were completed in time for one of the well known shore dinners which was served at one o'clock. The group picture shown herewith was taken just before the dinner was served. After the dinner, the boat races were held and also the ball game. In addition to the employees there were several invited guests present to enjoy the sport and everyone agreed that the outing was one of the most enjoyable events in their memory.



EMPLOYEES OF THE UNIVERSAL WINDING COMPANY AT ROCKY POINT, R. I., AUGUST, 1911.

USES OF RAW HIDE.

The original raw hide pinion was very crude in construction, having been practically hand made in 1881. The idea of constructing a gear of raw hide was conceived by the late Capt. D. R. McCutcheon who was at that time connected with the Chicago Raw Hide Mfg. Co. This raw hide pinion was made to replace a metal one in a gear drive that was giving a customer considerable annoyance on account of noise. The experiment proved highly successful, not only was the noise practically eliminated, but it was demonstarted that raw hide has as much strength and gave equally as much wear as metal used in the same place. It was not however, until the coming of direct drives with electrical power that raw hide pinions came into general use. The engineering world soon recognized the superior features of raw hide over metal in gear drives, raw hide being a non conductor it was found to be the safest material for use around electrical machinery, it was also demonstrated that there was sufficient flexibility in raw hide to relieve the machine of vibration, by doing away with the jar, consequent upon the meshing of metal gears, thereby prolonging the life of the machinery and making a great saving in the cost of repairs.

The CHICAGO RAW HIDE MFG. CO., 1301 Elston Ave. Chicago, Ill., are sending out a booklet to the trade illustrating and describing the Chicago raw hide pinions; selected cut lace; raw hide belting; raw hide rope; raw hide twist belting; raw hide solid round belting; raw hide hydraulic packing; raw hide solid pegs for metal belt lacing; and raw hide mallets and hammers. They also have a lubricant for raw hide pinions, put up in collapsible tubes, which assists in keeping the pinion in perfect condition, toughens the fibres and adds to the life. Their products are backed by over 30 years of practical experience.

THE FARBENFABRIKEN OF ELBERFELD CO., 117 Hudson Street New York, have sent to the trade seven new color charts describing and illustrating their latest products along these lines.

The Thomas grate bar is eliptic in construction and is made up of two opposite curved surfaces joined together at each side with spacing and connecting lugs of one-third contact, leaving two thirds air space. The top portion of the bar is the fuel supporting part, while the bottom supports or holds up of the top of the bar. The air passing through this lower part of the bar prevents it from getting hot and it retains its original shape without buckling, or warping because of heat. Another feature peculiar to the eliptic bar is that of self cleaning while in operation as its curved surface enables it to sift ashes automatically as they are made, leaving live coal and fresh fuel on the bar at all times. The clinker separates itself into particles and is expelled in the shape of a cinder as it finds no flat surface on the bar to lie and form into cakes. The accompaying illustration gives a comprehensive idea of the design of this bar. These bars are manufactured by the THOMAS GRATE BAR CO., Valdosta, Ga.

WORSTED YARNS.

For many years prior to the civil war it was assumed that because of climatic and other conditions the spinning of worsted yarns could not be successfully carried on in the United States. In 1854 the English worsted manufacturers of Bradford presented to Congress through the British Minister in Washington a memorial urging the reduction of the existing low ad valorem rate of duty of 25 per cent on worsteds, for the reason that they did not come into competition with American goods. What is more remarkable, the American Congress actually granted the petition of these foreign manufacturers, and in 1857 reduced the duty to a point where American competition was thought to be immpossible. Step by step, however, the successful manufacture, not only of worsted yarns but of worsted fabrics of all descriptions has been developed in the United States and all difficulties have been overcome. The ARLINGTON MILLS were pioneers in this work and are now producing many millions of pounds of yarns every year. These yarns are sold to manufacturers of almost every kind of worsted cloth and go into women's and children's dress goods, as well as men's fabrics. They are also used in the production of underwear, hosiery, sweaters and braids. The yarns are spun in practically all qualities and degrees of fineness and are delivered in solid colors, in fancy mixtures or any doubles and twists.

The fancy colored yarns for men's wear goods spun by the Arlington Mills enjoy deservedly a reputation unsurpassed by those of any other American or European manufacturers. They are a specialty in the products of this mill and have long been the standard. They are delivered in all colors and mixtures, in skeins or on dresser spools, on spinning bobbins, quiller bobbins, combs, tubes, or in any form required by the purchasers. The customers have the security of knowing that when they buy Arlington Mills gray or fancy colored yarns they are buying standard grades and that the quality is the same from one year to another.

A United States Patent has been granted to Augustus Amrein of Philadelphia for an apparatus for dyeing. The principal claims made for this machine are that the material is completely treated with the dye liquor without exposing it to the action of the air. It is also at the same time agitated so that some portions of the material may not be exposed to a greater extent than others to the action of the dye liquor. Arrangements are made to replentish the dye vat from time to time with fresh dye so as to keep the liquor at a uniform standard. The agitating is done by means of curved pins. This invention is especially applicable to the dyeing of vat colors, such as direct, sulphur, acid and chrome colors, and other colors that are liable to be oxidized by being frequently brought into contact with the air while being subjected to the dyeing liquor. This patent is numbered 997,360 and copies of the patent papers may be obtained by addressing the commissioner of patents, Washington, D. C., and enclosing five cents.

END VIEW PLAN CROSS VIEW